THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

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THE PROPER USE OF MATERIALS.

IN the same way that no colour can be said to be impossible, so no material is really unsuitable if treated in the proper manner and used in the right place. But there is no choice upon which an architect has to deliberate which makes greater call upon his sense of fitness and appreciation of the meaning and significance of inanimate things. It involves a sense of colour and texture, and, when choosing materials which are made in standard sizes, a very precise feeling for scale.

The rage for variety has produced a flood of new materials, mostly artificial, some of which establish themselves permanently, while the majority disappear.

Meanwhile the genius is finding for himself new ways of using old materials. In recent years he has discovered that it is possible by using selected or mixed clays to obtain tiles and bricks of colours and textures more harmonious than the heavy tile or the terra-cotta brick, that by a promiscuous interspersing of tiles with the brickwork either in bands or for arches, or to level up courses, he can obtain a more interesting wall, especially if at the same time he eliminates the series of hard parallel lines produced by the struck cut joints of the pointing, and merely wipes the mortar off flush. He knows now how to get the most value out of the grain even of pine, by eschewing paint, using either stain or rubbing the wood with lime and varnishing with flat varnish to give it the pearly grey tone which is so pleasing. He has called into his service such materials as chalk rock, quartz flint, white tiles, and bricks made by dipping in white sand before the last burning, and many other neglected natural materials. He finds uses for all kinds of rejected or disused objects, such as millstones, cobbles, bedposts, lead cisterns, etc., and even incorporates with his fabric parts of ancient buildings such as panelling, staircases, beams, doors, and carvings, to such an extent that dealers in these wares have sprung up all round us.

The rage for the antique is due to the excellence of the workmanship, for everything made in the Augustan age of England, the sixteenth, the seventeenth, and the eighteenth centuries, when time was no consideration and perfection "the only wear," bears the hallmark of genuine craft upon it, and the material was always of the finest and selected with great skill for the purpose intended. To-day it is difficult to get even faithful copies made of these objects; our wood is not usually so fine or so well seasoned, and the number of artificers who take a pride in their work for its own sake is so few, for the methods of Curtain-road, with the ubiquitous glue-pot and screw, have pervaded the whole trade.

We have only ourselves to thank for all this, for price governs these things entirely, and for the man who will pay there is still the patient worker, with all his great tradition behind him and a careful hoard of selected wood. These are the men who should be encouraged to do their best, and to school others to work as well, so that in spite of other influences we may continue to hold our lead the world over.

But, however that may be, it is certain that an intuitive feeling for the medium in which one works is essential to the attainment of fine architecture.

Be the proportions or details ever so fine, they lose their charm if executed in cold, unsympathetic material, or in other material too restless, perhaps. Sometimes there is no choice, though normally we are fortunate in this country in having a very wide range to choose from; our geological formation gives us every conceivable variety of stone, clay, etc., and our central position every possible timber and metal, so no excuse can be found for the incongruities or violent contrasts which so often show themselves.

The ancients understood all this, but to-day we are faced with different problems. The French have taught us many lessons in modern expression through new materials, as in their inimitable way of designing steel girders and framework, their use of ornamental lead and zinc work, etc., but they seem nevertheless to have failed to keep their hold on the old problem of harmonising materials with their surroundings, and we find surprising instances in which through want of this, as in many of their modern country houses, they have produced effects far from sympathetic.

This is the sphere in which our English domestic architects have shown their superiority. They have adopted the principle of harmony instead of that of contrast, with the result that their work is sought for by enlightened housemakers, not only at home but in almost every country where quiet and restful buildings, without violent effects or jarring notes, are sought after.

There is range enough of new material here at our feet to please the most fastidious, though frequently we hear of great exercise of ingenuity to avoid anything new and draw from outside sources such coveted relics as old tiles, old Horsham slates, old oak, and old stone.

Although this country is rich in natural building materials, invention has been busy in devising new ones, some of which are of considerable merit owing to the fact that they are more impervious to atmospheric influence than are natural materials. Among these we may mention terra-cotta, Carrara ware, faience, and a number of serviceable roofing materials, one advantage of which is their extreme lightness.

Now, apart from the axiom which dictates the use of local materials wherever possible, we think the climate of this country is so versatile that, to get good effects, materials should be used which reflect these changes and show evidence of weather while retaining their structural integrity. That involves, for the most part, the use of natural products and a close study of their properties. Nature's colours are never garish, but must be rightly used, and the texture of each will determine the way in which they shall be worked. It is painful to see the sturdy English oak with its large fibre reduced by machines to delicate mouldings more suited to crystalline substances like marble; the same applies to a coarse-grained stone. It is equally painful to see a metal run into moulds as cast-iron or lead, as if it were ductile, and *vice versa*: also to see highly-glazed, unresponsive surfaces, with no absorption or breathing power, as it were, except where necessary in exposed positions, or for radiating light or other special purpose; also for a plastic material like plaster to be treated like soap or wax by pressing it into moulds; also the practice of enamelling slate and iron.

The great exception to this general principle is for buildings in cities. While smoke still refuses to abate itself, impervious materials must be considered for their brightness and cleanliness, and such materials as Carrara ware are likely to be used. It is an unresponsive material, and its aspect never changes; and in that respect it is inhuman; incidentally also these materials bring opportunities to Philistines to do things they could not do without, such as the perpetration of a canary yellow or chocolate brown front on our streets. Such materials necessarily require the greatest care in design if they are to be used to full advantage and effect, but in the right hands they give the architect exceptional opportunities.

The Nature School will no doubt agree with all this, and possibly even protest against the final reservation, pointing out the peculiar bleaching properties of Portland stone in support of their objection, but highly conventional buildings, such as railway stations, hospitals, markets, etc., require special treatment as the hygienic considerations predominate, and the artificial material fulfils necessities which the natural materials fail to meet.

A sense of the "fitness of things"—the old qualification for a gentleman, by the way—settles everything. Climate, position, and purpose will, if well thought out, give the key to a wise selection, but if ignored will ruin the finest designever conceived.

NOTES.

A New Standard of Values.

ARCHITECTURE in modern times, in this country at any rate, has always, we suppose, occupied a somewhat anomalous or loosely-defined position. We are all accustomed by this time to the confusion that appears to exist in the public mind as to the real nature of the architect and as to the precise functions which he may be rightly expected to perform. Every layman seems to have his own ideas on the subject, which ideas differ from those of every other layman. But, however much clients may be found to differ on certain aspects of the architect's many-sided nature, there is one aspect on which it is safe to say they will all be found to agree. Whatever else each individual one of them may expect him to be, they will all expect him to be a man of business competent to protect their interests, and, although it may be a fact that some people regard an architect as a luxury, yet it is undoubtedly true that most people regard him as a necessity—that is to say, they would dispense with his services and save his commission if it was possible to do so. Architects as a body may not have been altogether satisfied with their position, but at any rate they had the satisfaction of feeling that, even if they could not obtain general recognition as artists, as business men they were recognised as essential and a necessary part of the structure of modern life. But with the coming of war all this seems changed. Before the war the architect was the humble but necessary man of business whose claims to the status of artist were never taken seriously; now he is coupled with other artists and brain-workers, exalted persons perhaps, but luxuries to be dispensed with for the sake of economy. This opinion of the architect's nature and functions may not be much nearer the whole truth than the one previously held, but those whose living has been prejudicially affected by it may possibly find some comfort in the thought that the more vital and ennobling aspect of their work has at last obtained recognition. Be this as it may, it will be their own fault if when the war is over this hard-won recognition is ever lost sight of again.

The Workman's Tools.

WE have already referred to the difficulties confronting those responsible for the administration of the Prince of Wales' Fund caused by the unexpected fact that the bulk of the distress caused by the war is found to be among the brain-workers of the country, and not where all previous experience justified us in looking for it—among the manual labourers. We alluded to the danger that, owing to preconceived ideas on this subject, men of professional and technical skill might be allowed to sink below that minimum level which it is necessary for them to maintain if their knowledge and skill are to be of any use to the community, and are inclined to think that this danger is not sufficiently recognised, and that more comprehensive measures might be taken to avert it. Some definite attempt should be made to define this level as it applies to the various professions and intellectual occupations. It seems evident that if the skill of the architect, for instance, is to be of any use to the State he must be in a position to accept commissions and to carry out any work that may be offered. Whatever an architect's economies may be in his private life, there is a point beyond which they cannot be carried in his professional life without sinking to the level at which he ceases to be of use to himself or to anyone else. If, like the working man, he loses his tools, he loses his work also. If he is to keep his work he must keep his tools. The carpenter's bag of tools is easily defined, but, although the tools of the architect's trade are of a different nature, they are equally necessary to him, and it should not be beyond the powers of a committee to arrive at some practical definition which would serve as a guide. When arrived at this definition should be accepted by the Government Committee as the equivalent of the workman's bag of tools and as the basis on which a scale of relief should be calculated suitable to the needs of the intellectual workers of the country. This, however, may entail a further adjustment of ideas, as it appears obvious that the amount which would be sufficient to save a carpenter from the necessity of pawning his tools is not likely to be sufficient to save the architect or other professional man from a sacrifice which would be equally fatal to his chances of further employment.

The Economy in Building.

FROM Wolverhampton, Shrewsbury, and many other large centres we hear of the house famine produced by the cessation of building operations in consequence of the war and the difficulty of obtaining the usual credits and finance. The situation is more serious than it otherwise would be, because the land legislation of the late Government had already led to a great reduction of speculative building. In the Wolverhampton district there has been a large influx of population necessitated by the activity in the industries connected with the war, and the same state of things obtains elsewhere. Cause and effect act and counteract, and the great demand for increase of wages in many industries has been caused by the increased cost of food and of rent, while the increased rents are due to shortage of accommodation. If, therefore, the Government instead of refusing or delaying their sanctions to municipal loans for purpose of housing accelerate them, they will be removing one of the causes which compel the community to pay more in wages than heretofore; and when it is considered that the bulk of the engineering works of the country are employed on direct Government work connected with the war it is obvious that the wise encouragement of housing schemes might in the near future prove to have been a national economy. We hear complaints of the large expenditure of certain classes of the workers on luxuries and pleasure as a consequence of the high standard of wages, and it may very well be that if better housing facilities were provided wages would tend to be lower, while the housing problem would be automatically brought a step nearer solution in many localities.

Birmingham and Building.

ONE of our Birmingham contemporaries has made the definite statement that the scarcity of timber and its consequent high price are hindering building operations there at the present time, whereas we have the authoritative statement referred to last week to the effect that the timber stocks are unusually large and that the material is coming in freely. These two statements, if not contradictory, certainly point to the probability that timber is being held up to the national detriment and the advantage of the individual—an advantage gained, as we pointed out, by the protection of the Navy, to the cost of which we all contribute. It is further stated that in their desire to minimise expenditure—a worthy object—and because it is considered there may in the near future be a shortage of wood blocks, no more streets in Birmingham are to be paved in wood for some time to come. The economy may be a wise one, but the reason alleged seems to us to be mistaken, as we cannot see why a future shortage should be anticipated, for if our existing stocks are now high, and timber is coming in freely now, we cannot see what events are likely to alter the position to our disadvantage at a later date. There may be said to be no problems which are as difficult to solve without mistakes as economical ones, as has been proved in many periods of history; and one great necessity at the present is that we should not be satisfied by specious and illusory logic, but should require adequate proofs before accepting the amateur economists' conclusions.

Reprisals.

AMONG the most intricate problems for statesmen to settle arising out of the course of the present war is finding out adequate measures with which to meet injustice done. The German Government apparently has no regard for the private property of its enemies, and has removed the plant of factories in Northern France in order to set them up in Germany. Are the Allies, when the opportune time comes, to follow the precedent set, and are private German manufacturers to lose their plant and see their means of livelihood destroyed? If this is done, such acts become sanctioned by international use as part of the unwritten codes of belligerents. At the same time, it may be difficult or impossible to exact reparation in any other manner from a country exhausted by war. To give another instance. Belgian prosperity has resulted partly from its excellent system of tramways arranged to facilitate internal traffic; and the German authorities have in many places torn up the rails for use for military purposes in Russia. This affects not individuals, as in the instance referred to, but whole commercial communities, and a just and fitting retribution would seem to be to replace the stolen Belgian rails by similar material from Cologne and other German centres. If adequate compensation in the shape of a direct indemnity is impossible, we hope it will be feasible to exact an equivalent in kind for such ruthless acts of robbery which form so many proofs that Germany has separated herself from European civilisation as completely as though she belonged to some other planet.

Success.

IN his Presidential address to the British Association Professor Shuster dealt with qualities of intellect and temperament which he considered essential to success in science and business life. He holds the popular theory that success is the result of gifts specially associated with different occupations to be a fallacy, and points out that a combination of different qualities is what enables a man to succeed in any occupation. He regards the common habit of making a distinction between men of theory and practice as dangerous and misleading, for that which is of value involves both theory and practice. The solution of every problem involves more points than can be individually considered, and judgment is necessary in order to eliminate what is least important. We know, in the practice of architecture, that these conclusions are right. Brilliant draughtsmanship is most useful, but without a power of design becomes a snare Draughtsmanship and design combined are again of little use unless the architect has the judgment and tact which enable him to make use of them in the right way. Life presents us, sometimes daily, and even hourly, with a kaleidoscopic series of alternatives, and it is judgment or intuition alone that enables anyone rightly to determine their course. What is described as the magnetism of a strong personality is in reality the quick power of judgment which enables a man to avoid giving emphasis to what is for the moment inopportune. Yet even personal magnetism is ineffective if a man has not a clear and definite purpose, but coupled with it in most cases quick success results. A man once said that he had often disapproved of his wife's actions, but had been very happy because she had never "bored" him; and we often find that those who succeed without any very evident qualifications have the important ones of discretion and sympathy.

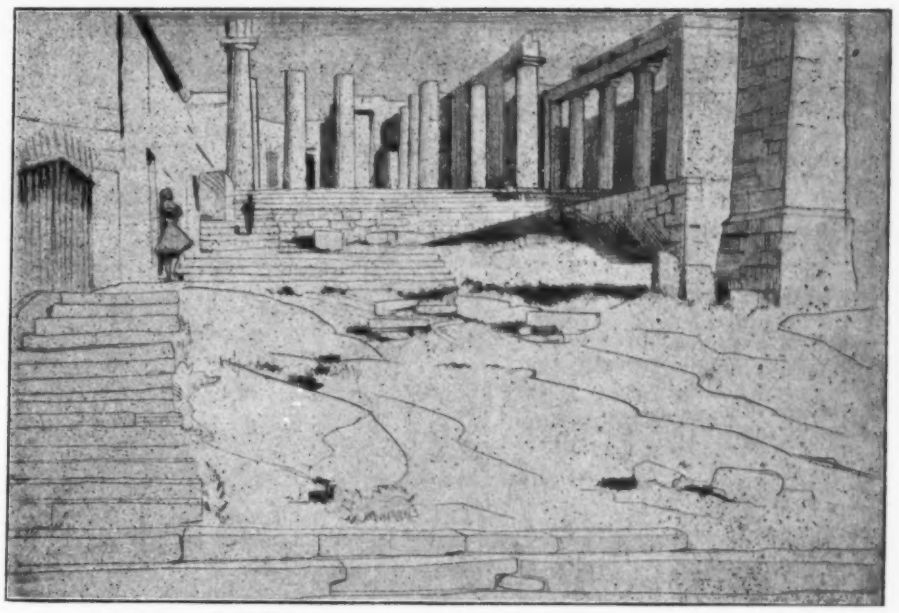
GREEK ETCHINGS.

We give three illustrations from Mr. W. J. Palmer Jones' fine etchings of Greek subjects, which are both delicate and forcible in execution. We wish more of our architectural students could reach Grecian shores, as it would prevent them from thinking Greek architecture can be "copied" in other lands.

PRIDE AND PREJUDICE.

No attribute of the English character rouses so much latent antagonism abroad as the average Englishman's indifference about the people of other countries, for it is somewhat naturally attributed to a rooted prejudice in favour of his own—a prejudice which rests not on judgment, but on an easy assumption of superiority. Those who have resided in the East know that many of our countrymen will live for years in the midst of the peoples belonging to civilisations compared with which our own is of mushroom growth without caring to learn anything about them. Such people judge the Eastern by English standards, forgetting that each civilisation has a standard of its own, by which alone its success or failure can be estimated. It is true that we seldom express our views of other nations as Captain Mirvan did in the well-known novel, "Evelina." It is equally true that we are still, in large measure, prejudiced against anything foreign *per se*. And if this is true of us as a nation it is also to a large measure true of different sections of the people, and pride and prejudice separate the great bulk of those following the æsthetic callings from others whose work and patronage are essential to their welfare, and to that of Art also. Architects seldom stop to consider why the public, of whose want of appreciation we complain, has cause to think otherwise than it does; nor do we make a determined effort to promote a better understanding. Yet the pride some undoubtedly feel has not a justification in the fact that the arts are practised by the hereditary descendants of great craftsmen and artists as they were centuries ago, and are still in parts of the East, for at one time those who to-day are exponents of the arts were but units of the public which appreciates art so little. Many architects, looking back to earlier years, will remember that in the past a building was an object of little interest to them, and most of them possessed the bad taste they deplored in others. Nature possesses beauty in most of its aspects, and may be said to be always well and wonderfully designed; while most of the habitations of man by which we are surrounded are badly designed, if, indeed, they can be said to be designed at all.

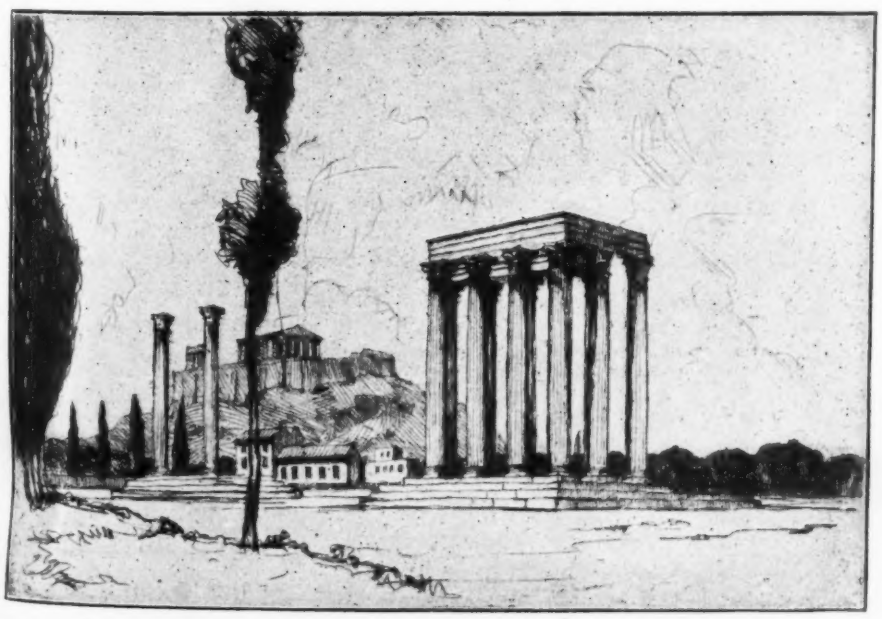
It, therefore, should be considered as natural, though unfortunate, that the judgment of the public should be formed by what it sees most of, and that it should form the view that building is rather a necessary evil than an addition to the enjoyment of life. Seeing that most of the remains of the past that exist take the form of large and massive buildings, it is natural that their beauty—a beauty which is frequently manifest to the uninitiated—should be accounted for by the fact that "expense was not spared in those days," and we obtain the popular conception of architecture held by a public much concerned in other matters, which is, that it is a luxury the opportunity for indulging which seldom arises, and has little integral relation to modern life. As every member of the community who works for a living has, in his occupation, something which is of vital importance to him, it follows that a very small proportion only take an active interest in architecture. London admittedly contains a larger proportion of works of architecture than most of our provincial towns, but few of the inhabitants of Shepherd's Bush or Clapham have more than the most casual knowledge of the city churches or Westminster Abbey. As for the lesser architectural monuments, fine old houses or squares, it is a matter of pure chance if the ordinary Londoner ever sees them. Architecture, to him, is the generic name for square miles of mediocre commonplace houses and commercial buildings, and the wonder is not that architecture does not appeal; the wonder would be if it did. If chance or necessity leads the average member of the public to employ an architect it is as a necessity occasioned by circumstances—a necessity, first and last, connected with the expenditure of a good deal of money.



Athens: The Way up to the Acropolis.

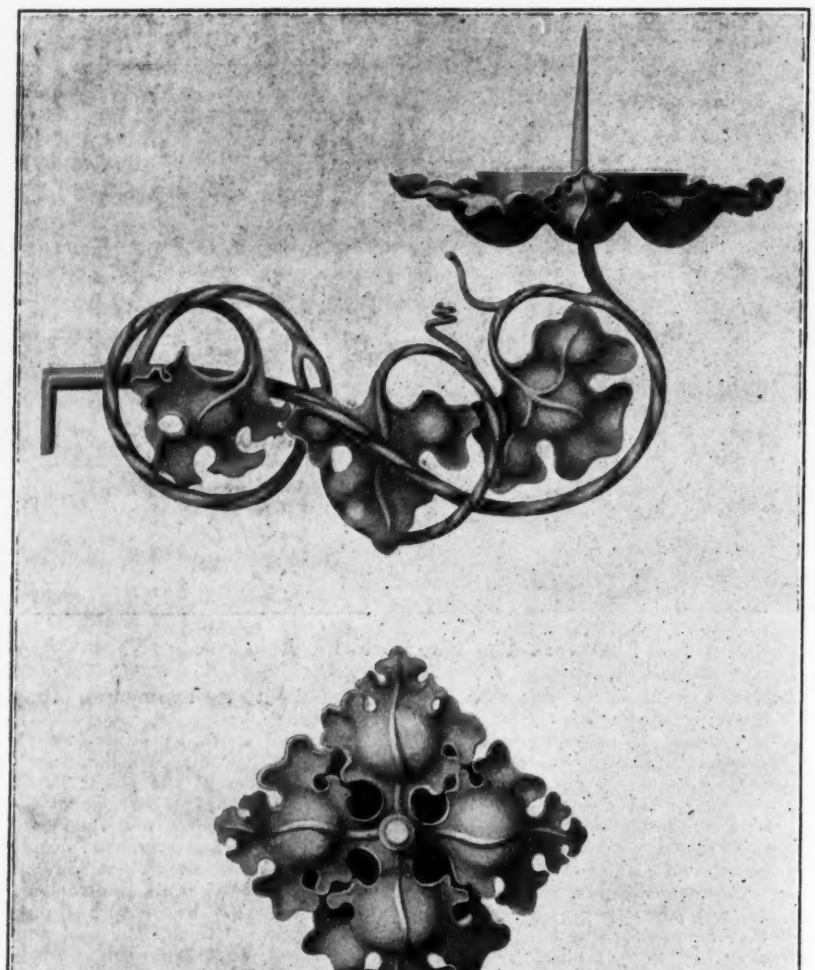
The architect, on the other hand, begins by studying just those special buildings which the average member of the public hardly knows. He will study the proportions of a mediæval building in text-books, and then go to see the building itself, and perhaps spend days in measuring or sketching some small part of it. He learns what to admire and what to condemn, and gradually his taste is formed on the sound basis of a knowledge of the past and the able criticism of that knowledge made in the present. His power of individual design is, at first, tentative, based on fairly accurate copying of what he has been told is excellent, and by degrees he attains the knowledge and power of execution on which he has mainly to rely for success in his calling. He quickly imbibes the prejudice which credits the public with want of appreciation of architecture, forgetting that what he considers as architecture alone are the exceptions, and what the general public believe is architecture is the general mass of building as we see it. He acquires the pride of his calling—a pride which frequently takes the form of a belief that he is gifted with qualities denied to the public, while in reality they show the soundness of their judgment in feeling little interest in architecture as they understand it, so that the very fact of the position generally taken by them may almost be considered as a proof of the possession of insight. The exceptions naturally loom large in the architect's mind, for he goes through life thinking of them and hoping that his own work may be included in the happy category.

Argument is impossible unless we can agree as to a definite basis, and the first step towards that basis on the part of the public would be afforded by the inclusion of some elementary instruction on the nature of architecture in school and college curriculums; the second step must be taken by architects themselves, and requires the gift of sympathy and insight into the minds of others, and a greater tolerance of what is a perfectly logical standpoint on the facts as ordinarily presented. The heaven-born genius may have justification for pride, but the genius is rare and most of us should, instead, be thankful that they have had the privileges of education on which their knowledge and taste mainly depend. And, apart from the general question of appreciation of art, it is well for the architect to remember that a conviction of the value of what a man is paying for is necessary if he is to be a willing purchaser, and that the ignorant client must always be difficult to deal with, while knowledge and sympathy will make even commercial transactions easier. Nor should the architect fail to recognise that as most people build primarily and chiefly to satisfy material wants, this standpoint implies no reproach on the understanding of the client, and should be frankly recognised. If the client has the knowledge that the architect acts on this assumption he will be given a free hand in the designing of a palace; if not, he will find himself checked and interfered with when the point at issue is that of the arrangement of a cottage. And finally, we should discourage overstatements in current architectural literature,



Temple of Zeus, Athens.

This Temple was commenced by Pisistratus on the site of an earlier shrine. In 174 B.C. Antiochus Epiphanes continued the work, the architect being Cossutius, a Roman, who chose the Corinthian Order. It was finally completed by Hadrian.



A Mediæval Candle-Holder.

[This charming example of old mediæval ironwork in the form of a candle-holder forms the naturalist treatment of wrought-iron of late fifteenth-century date.]

a great many of which consist of eloquent expressions conveying little meaning; the more we can express ourselves with moderation and reason the better fitted we shall be to explain our views to a public who, if they are sometimes ignorant, like to be appealed to as possessing the understanding which was not unlike or unequal to that possessed by the architect himself before he joined the ranks of those who often show both "pride and prejudice" in dealing with the public on whose support they depend.

HOW SHOULD LIGHTING FITTINGS AND HEATING APPLIANCES BE DESIGNED?

In the past centuries, which many of us regret chiefly because we have not sufficient imagination to conceive what their discomforts and disadvantages were, the want of machinery and mechanism, which form so large a factor in our life of to-day, and the universal use of manual methods of production gave a character and individuality to the design of the fittings used in building which lead many to think the mediæval period of history was ideal for the practice of the arts. But beautiful as much of the old metal-work is, it is impossible to resuscitate the epoch of the individual smith, nor would the complications attendant on the use of gas, hot water, and electric light make it feasible to retrace our steps and once more practise the old methods of design on a large and general scale. Another difficulty would be that a very small proportion of those interested would be willing to accept the roughness of the simpler kinds of hand-made fittings or to pay the price necessary for the best and finest examples of hand-made fittings. The example of fifteenth-century work which we illustrate shows what that finish was, and its production now would probably cost one-third the amount which would be paid for the lighting fittings in a small house for one such fitting alone. If we consider the question on its merits we shall be forced to the conclusion that there are merits in the work of the modern world apart from those of cheapness. A comparison between the dress of the past and that of the present, for example, would convince most of us that, picturesque as the dress of the past often was, it was more clumsily made, and the examination of a woman's shoe of the time of Charles II. and one of the present day would serve to emphasise this fact. Beautiful as is old jewellery in design, its execution both in the setting and cutting of precious stones is clumsy and awkward when compared with the best we see to-day. Similarly the gorgeous casings of many an old lock covered uncouth and awkward mechanism, and there is a great difference in finish between a mediæval hinge and the best of those made to-day. The intertwined crescents of Diane de Poitiers no longer find their counterpart in similar ornament on our fittings, as crests and emblems have passed into disuse, while the average educated man of to-day does not understand the secrets of blazonry which were part of the ordinary education of his forefathers; but, on the other hand, machinery and mechanism have made it possible for all classes of the population to use and enjoy what once would have been considered luxuries. What is possible now fittings are turned out by thousands is that every fitting should be well designed, and not, as in the past, the best the individual worker could produce; and this the despised materialistic progress of the last century has made possible, therefore our task should be to consider how this desirable end can best be brought about. Is the proper means to reject the standard manufactured article, whether lock-case, hinge, or grate, and to replace it wherever possible by a specially-designed architect's fitting, or by sympathetic co-operation with the manufacturing firms to help them to supply us with fittings which are good or suitable? We think the latter is the better way, for our knowledge of the fittings which have been specially designed by architects leads us to think that in few cases have architects the requisite knowledge of the details of craftsmanship to design metal fittings in the best possible manner. But they are in a position to give the manufacturing firm the benefit of their criticism, whether expressed verbally or by rough sketches, and the designers who work for manufacturers should be well grounded in the detail of style. As the architect studies masses and architecture, the designer of fittings should study the corresponding detail belonging to his own craft, and if this be done, as we are glad to say it is, by many of our best firms the architect will find the adequate means of expressing his purpose ready to his hand, and every well-designed manufactured article has a wider range of influence than the old hand-made fitting it replaces. In the design of grates, radiator casings, and other of the improvements connected with our modern life our manufacturing firms have made progress along the right road, which goes to prove to all that the processes of modern life have not eliminated the necessity for good design, but only given it an increased range of influence.

The task of the manufacturer after the war will be to increase his market both by energy and business methods and by the intrinsic excellence of the commodities he has to dispose of. Since the architect's approval of fittings is what determines their success in a large measure, because the example of architects' work is echoed in contemporary speculative building, it would be well if manufacturing firms supplying fittings engaged first-rate architects to go over their samples from time to time and advise them what they should stock and what discard, suggesting the directions in which new departures should be made. For the manufacturer's obvious policy is to keep the smallest stock which will cover the wants of the purchaser, who is, in a great majority of cases, advised by the architect. Modern conditions, in effect, have led to the employment of a smaller number of craftsmen; on the other hand, they have made an exceptional position for the master craftsman, who has better opportunities of making a position than he ever had before—an opportunity given by the circumstances in which we live.

SCHOOL OF ART WOOD-CARVING.

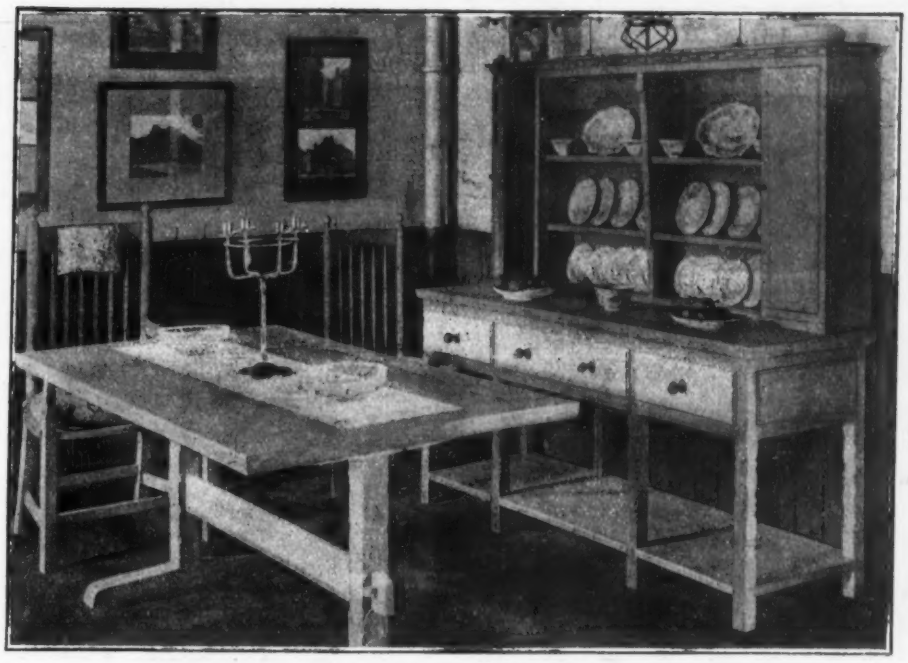
The School of Art Wood-Carving, 39, Thurloe-place, South Kensington, which is under Royal patronage, has been reopened after the usual summer vacation, and we are asked to state that some of the free studentships in the evening classes maintained by means of funds granted to the school by the London County Council are vacant.

Rameses II. Luxor Temple. (*See page 217.*)

This figure is one of several similar ones between the columns of the main peristyle court, to the north of which is the great pylon. The Temple is in a good state of preservation, although much remains unexcavated. A large part of the Temple was built by Amenhotep III.

FURNITURE DESIGNS.

THESE two illustrations show some of the excellent and simple furniture made in the workshops of the Hammersmith Guild at Hampshire House, Hog-lane, Hammersmith, and are from designs by Mr. Charles Spooner, F.R.I.B.A., and Mr. Fred Rowntree, F.R.I.B.A. The work produced by the Guild will bear favourable comparison for quality and finish with that which can be obtained elsewhere, while we feel that in encouraging the various guilds and societies who are now devoting attention to the design and making of furniture and other accessories of building we are doing something to raise the whole standard of the applied arts of design. The Hammersmith Guild also undertakes embroidery, and we have been shown many very creditable specimens carried out by women workers under their auspices.



Furniture produced by the Hammersmith Guild,

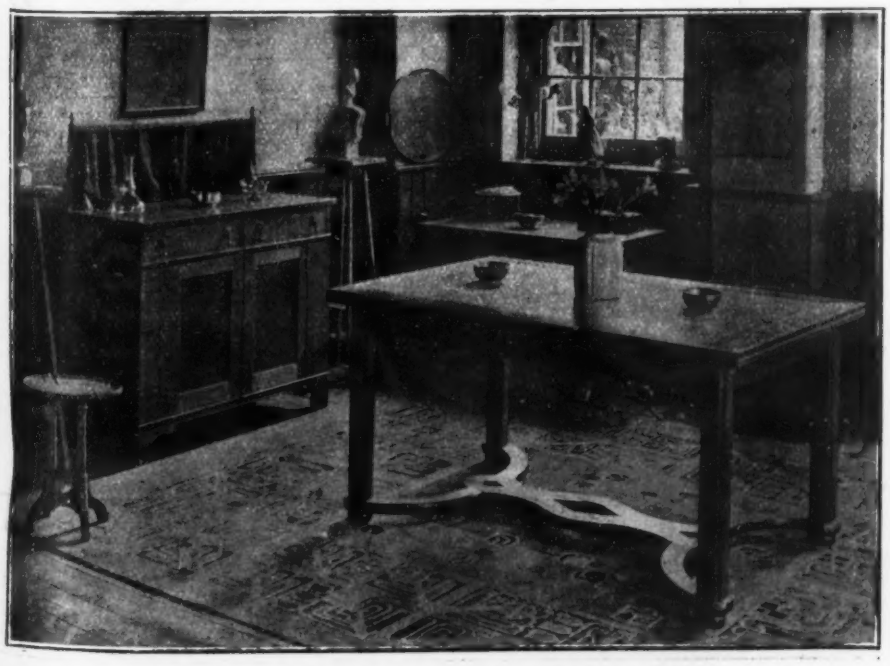
Designed by Mr. Fred Rowntree, F.R.I.B.A.

OBITUARY.

Mr. W. H. Lynn, R.H.A.

Mr. William Henry Lynn, of Belfast, whose death, on September 12, at the age of eighty-six years, was announced in our last issue (p. 206, *ante*), was a Fellow and Past-President of the Royal Institute of the Architects of Ireland, which, in December, 1911, nominated him for the Royal Gold Medal. He was a member of the Royal Hibernian Academy, and for a while a Fellow of the Royal Institute of British Architects. He and his only brother, the late Samuel Lynn, the sculptor, were the sons of Lieut. Henry Lynn, R.N., of Cairncastle, Larne. He was apprenticed to Sir Charles Lanyon, and became his manager, with Sir Thomas Drew as one of his colleagues on the staff. In 1854 Sir Charles Lanyon took him into partnership. A few years afterwards Sir Charles's son John joined the firm. Upon the death of Sir Charles Lanyon in 1889 the firm of Messrs. Lanyon, Lynn, & Lanyon was dissolved. Mr. John Lanyon died in 1900. Mr. Lynn was the architect of the Custom House, Belfast (with Sir Charles Lanyon in 1857); the monument on Scrabo Hill to the Marquis of Londonderry; the Town Halls, Barrow-in-Furness and Chester; Killeyleagh Castle, Co. Down; and for Mr. James Bruce, D.L., the mansion at Benburb, Co. Tyrone; and the Earl of Kenmare's seat at Killarney, which a fire destroyed some months ago; the churches of St. Paul, Belfast; St. Patrick, Jordanstown, after the Irish-Romanesque manner, with a round tower; and one or two churches in Dublin. He succeeded Sir Thomas Drew as Hon. Architect, Belfast Cathedral, for which, we understand, he made quite recently the designs of the proposed baptistry.

Mr. Lynn went to Canada in 1878, upon the invitation of the Marquis of Dufferin and Ava, Governor-General, and prepared the designs for the Château of St. Louis, Montreal, which it was intended to use as Government offices. He was the architect for the remodelling and extension of the Belfast Harbour Offices; of Messrs. Richardson, Son, & Owden's warehouses and business premises, Donegall-square North, Belfast; and Sion Mills, Co. Tyrone, for Messrs. Herdman & Co. Perhaps the most important of his later works is the extension of the Queen's University, Belfast, of which the earlier portion, after the Tudor style, built of red brick, with stone dressings, and completed in 1849, is by Sir Charles Lanyon. Mr. Lynn added the Library, which is used for the meetings of the Senate. In the competition of 1910 he won the first premium—there were fifty-seven competitors—for the extension buildings, illustrated in the *Builder* of October 22, 1910, which comprise a new south block, with additions to the Students' Union building and to the Medical School, and a drill-hall and rifle-range. Three years ago the Senate decided to proceed with an extensive addition to the University Library, in accordance with Mr. Lynn's plans and designs, at an outlay of about £10,000. Mr. Lynn gained the first premium with his plans and designs for the Parliament House and Government Offices, Sydney, New South Wales, but the project was ultimately relinquished. He submitted designs for the Carlisle Bridge, Dublin (1862), and many years ago a notable set for the Birmingham Law Courts and Municipal Buildings extension scheme. We may add that it was his wont to prepare his plans with his own hands, and that he was a skilful painter in water-colours.



Furniture produced by the Hammersmith Guild.

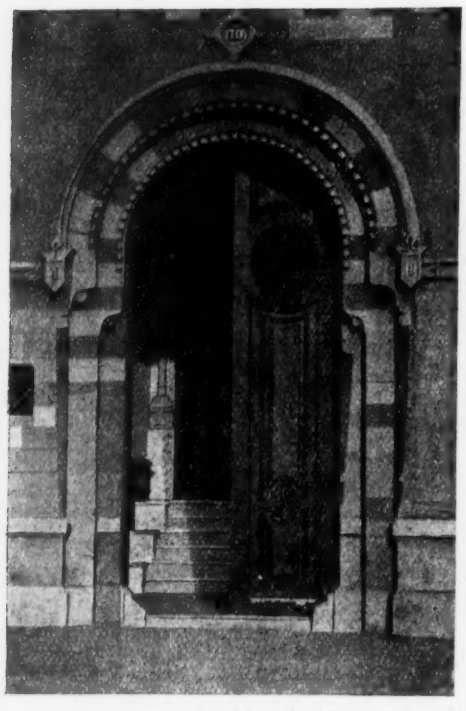
Designed by Mr. Charles Spooner, F.R.I.B.A.

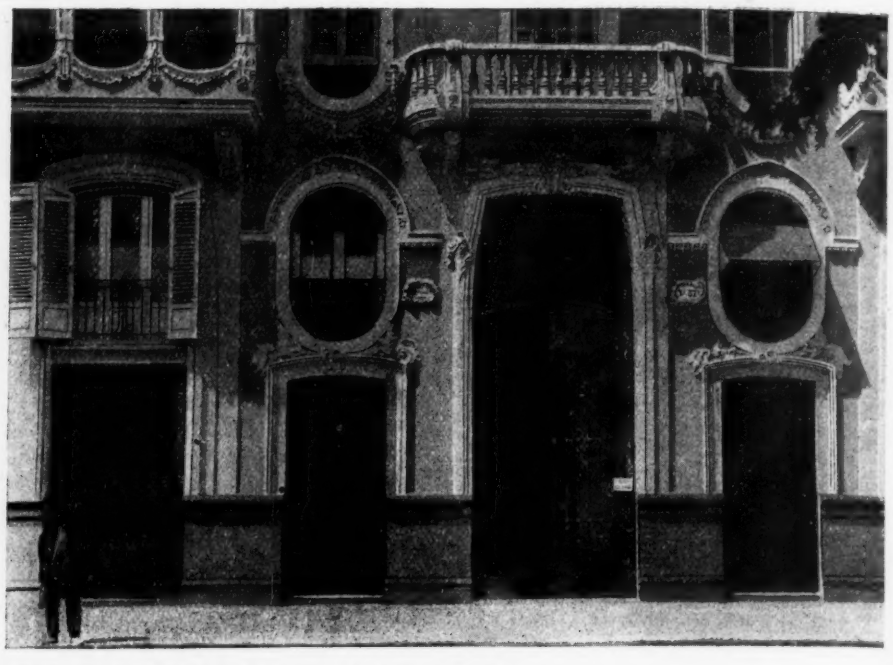
Mr. H. T. Steward.

We referred to the death of Mr. H. T. Steward in our last issue, but the following particulars will be of interest:—Mr. Herbert Thomas Steward, the senior partner in the firm of Messrs. Hunt & Steward, of No. 45, Parliament-street, Westminster, was the son of Mr. Thomas Francis Steward. He was born in 1838 and educated at Westminster School. He was articled to Sir Henry Arthur Hunt, C.B., and since 1859 he had been in partnership with Mr. Hy. Arthur Hunt until his death in 1904, and subsequently with his two sons, the firm practising as architects and surveyors. The firm has carried on a large and varied practice as surveyors, and designed many buildings in London and the provinces. They have been concerned in the estimates for many large undertakings, including the Royal Courts of Justice; the Natural History Museum, South Kensington; the Home and Colonial Offices, Whitehall; the General Post Office, St. Martin's-le-Grand; the Cape of Good Hope Houses of Parliament; the 1862 Exhibition Building; Whitehall and St. Stephen's clubs National Safe Deposit Company's buildings, Queen Victoria-street; the National Provincial and Messrs. Child's banks; the Society for Promoting Christian Knowledge, Northumberland-avenue; many of the fortifications on the Thames, Medway, the Isle of Wight, and Portsmouth; numerous works of the South-Western and other railways; a number of large dock, water, gas, and other engineering works, and public and private buildings have passed through their hands. Mr. Steward was a Fellow of the Surveyors' Institution from its establishment in 1868, and for several years a member of the Council, of which he was Vice-President and President 1904-5. He was Surveyor to the Cadogan and Paddington estates, also the Charterhouse, E.C., the Corporation of the Sons of the Clergy, and Eton College for their London building estates, etc. He was Chairman of the Committee of Management of Henley Royal Regatta and of the Amateur Rowing Association, and President of the Leander Club. He compiled the "Records of Henley Regatta" from its foundation in 1839 to 1902. He was a Past-Master of several Masonic Lodges, and Past-Grand Superintendent of Works, Grand Lodge.

Mr. S. Roberts.

Mr. Samuel Roberts, contractor, of Tavistock-place, Plymouth, died suddenly at Bristol last week, where he was engaged in the erection of a sanatorium at Pill, a few miles out of the city. Born at Plymouth about sixty years ago, he, after working as a carpenter, started in business at an early age as builder and contractor. In the course of a career extending over nearly forty years he carried out many important contracts, including the erection of the Grand Theatre, the markets and Corn Exchange, and Popham's premises in East-street. He was also concerned in the Old Town-street improvement, and erected many





Characteristic Modern Architectural Types, Valencia, Spain.

business establishments in that thoroughfare. He was also the builder of large residential property at West Hoe. Years ago he served on the Town Council for a short period, but his public work was chiefly accomplished in the capacity of a guardian.

RESIDENTIAL HOUSES, VALENCIA, SPAIN.

PRACTICALLY all residential houses in Valencia are constructed on the flat system, with four or five floors as the rule. Each floor is divided into two separate portions and can be occupied by distinct families.

The principal feature of these buildings, from an artistic point of view, may be said to be the doors leading on to the street. Very handsome examples abound, and quite a number are constructed of solid mahogany, costing in some instances from £150 to £200 each.

It is becoming very usual here to construct external doors of open ironwork, covered on the interior part with glass. An illustration of this work is given.

LAW REPORT.

Goods by Rail: Castors and Cabinet Handles as "Nails."

AT the Victoria Courts, Birmingham, recently, before the Stipendiary (Lord Ilkeston), Walter Clifford, manager for Mr. William Cook, nail manufacturer, Champion Works, Cumberland-street, was summoned at the instance of the Great Western Railway Company on six charges of making a misdeclaration as to the nature of goods consigned by his firm to firms in Bristol, Cardiff, and Plymouth. Mr. F. B. Evers (Stourbridge) appeared for the prosecution, and Mr. Duggan (Messrs. Duggan & Elton) defended.

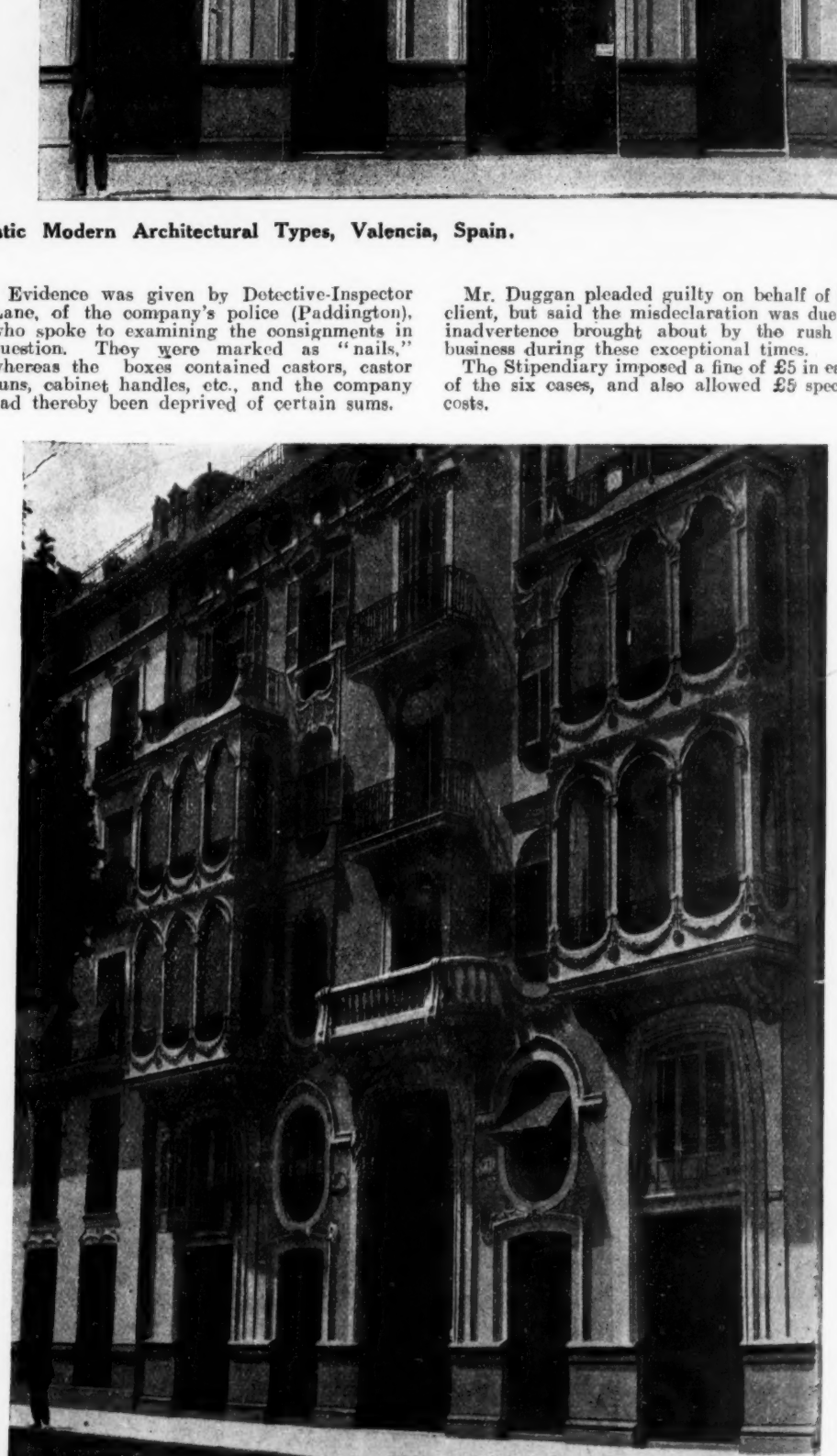
In opening the case Mr. Evers explained that the proceedings were taken under the Railway Companies' Consolidation Act of 1845. To protect themselves from firms who falsely declared the character of their goods in order to obtain the benefit of a cheaper rate, the railway companies had from time to time been compelled to take active measures to enforce the proper rates and prosecute those who persistently resorted to the practice. Cases of misdeclaration were somewhat numerous in the Birmingham district, and up to the present time all efforts to stamp them out had failed. For this reason the present proceedings were being taken. Another reason to be taken into consideration was that firms correctly describing their goods were seriously handicapped by the fact that, having to pay higher carriage, they were not able to offer their goods at the same price as their competitors who misdeclared, and so obtained a cheaper rate.

Mr. Evers explained that the rate for castors, cabinet handles, and similar articles was higher than that for nails.

Evidence was given by Detective-Inspector Lane, of the company's police (Paddington), who spoke to examining the consignments in question. They were marked as "nails," whereas the boxes contained castors, castor runs, cabinet handles, etc., and the company had thereby been deprived of certain sums.

Mr. Duggan pleaded guilty on behalf of his client, but said the misdeclaration was due to inadvertence brought about by the rush of business during these exceptional times.

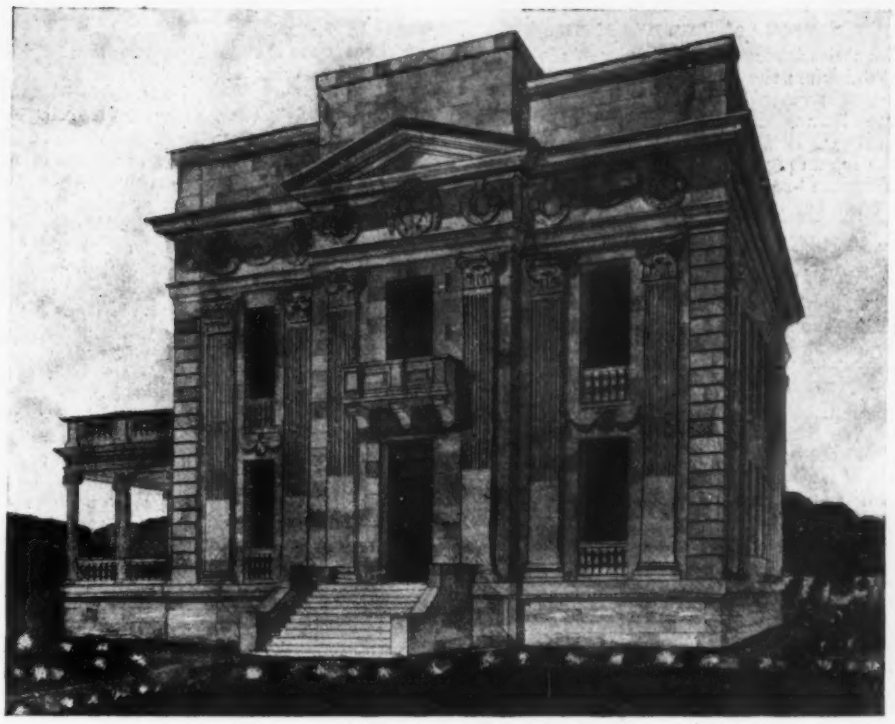
The Stipendiary imposed a fine of £5 in each of the six cases, and also allowed £5 special costs.



Characteristic Modern Architectural Type, Valencia, Spain.

HOUSE AT GIZEH.

THIS house will be erected at Gizeh, a suburb of Cairo. To ensure protection against the great heat of the sun a double roof is to be provided with an air space of 3 ft. 9 in. between, openings being provided in the exterior walls all round to allow the air to circulate. It is to be built on an island site in the centre of a large garden, and has a loggia on the north side with steps leading down to it. The cost will be about £4,000. H. BASTA.



House at Gizeh, Egypt.
Mr. H. Basta, Architect.

GENERAL NEWS.

Professional Announcement.

Having accepted an appointment in connection with the provision of munitions of war, Mr. John E. Yerbury, 3, Queen-street, Cheapside, E.C., is out of London. During his absence Mr. Edgar S. Underwood, F.R.I.B.A., of No. 3, Queen-street, Cheapside, E.C., has undertaken to carry on Mr. Yerbury's work at this address until his return.

The Architectural Association.

The Architectural Association School of Architecture reopens on Monday, September 27, and, although so many of the younger members of the profession have enlisted in the Army, there are no doubt still a number of students who have been rejected on physical grounds who will wish to continue their architectural studies. The day school, which at the beginning of the war gave upwards of fifty students to the Army, still retained thirty students who were for various reasons ineligible for military service, and the school was therefore continued on a reduced scale. The evening school, however, was closed down owing to the fact that practically every student joined the Army, and the School of Design which it was proposed to commence last September was also abandoned. The evening school and the School of Advanced Design will be reopened this year. The School of Design will be open until 11 p.m. daily, and monthly subjects will be set by the headmaster, Mr. Robert Atkinson, and in addition twelve hour sketches will be given at fortnightly intervals. Full details of the School of Architecture are contained in the curriculum, which is published by the Architectural Association at No. 18, Tufton-street, Westminster.

The London Master Builders' Association.

At a Council meeting of this Association, held on the 16th inst., the following resolution was agreed to :—

"The communications, etc., from Messrs. E. A. Roome & Co., *re* objectionable clause in contract for new premises for the Amalgamated Society of Engineers, Peckham, were considered, and it was unanimously resolved that the action of Messrs. Roome & Co. and Messrs. W. E. Blake, Ltd., be approved, and that they be thanked therefor."

A list of tenders for the work in question was given in our issue for September 10.

King Edward Memorial.

At a meeting of the Committee of the King Edward Memorial Fund, held at the Mansion House recently, it was reported that the fund amounted to £90,150, of which £72,000 had been expended in the purchase from the Corporation of the Shadwell Market site as a public park for the East End of London. It was not considered practicable, or even desirable, to proceed with the erection of the river wall during the war. The plans, however, were before the Port of London Authority, and would be dealt with at the earliest opportunity. Mr. Bertram Mackennal, A.R.A., to whom the equestrian statue of King Edward, for erection in Waterloo-place, has been commissioned, reported that the full-size model would be ready for casting in bronze at the close of the year.

Sale of Stonehenge.

At Salisbury, on Tuesday, the sale took place of the Amesbury Abbey estate, including Stonehenge. Sir Howard Frank, of Messrs. Knight, Frank, & Rutley, conducted the sale, and explained that the estate, which has many historical associations, comprises 6,420 acres, and has an estimated rental of £5,359. It was first submitted as a whole, but as no purchaser was forthcoming it was offered in lots. When Stonehenge was put up for sale Sir Howard Frank asked for an opening bid of £5,000, and bidding mounted to £6,600, at which the property fell to a local landowner, Mr. C. H. E. Chubb, of Bemerton Lodge, Salisbury.

National Competition, Examinations in Art, and Awards in Art, 1916.

We are informed that in view of the urgent need for national economy and other circumstances arising out of the war, the Board of Education find it necessary to give notice of the following changes in their arrangements for the National Competition, Examinations in Art, and Awards in Art, 1916.

1. The Board will not hold a National Competition in 1916.

2. The Board hope to be able to hold the Examinations in Art as usual, and have issued regulations for 1916 accordingly. They desire, however, to give notice that it may prove necessary at a later date to suspend the examinations. In that event they will endeavour to give as long notice of the change as possible.

3. The interim regulations for Scholarships, Exhibitions, Free Studentships, and other Awards in Art applicable to the year 1914 are provisionally continued in force subject to the following modifications :—(*a*) The Royal Exhibitions, National Scholarships, Free Studentships, and Local Scholarships to be awarded in 1916 may be restricted to numbers less than those stated in paragraph 1 of the regulations ; (*b*) the Board may find it necessary to restrict the number of new Local Exhibitions in Art to be aided under the provisions of Chapter II. of the regulations ; (*c*) the award of Princess of Wales' Scholarships may be suspended for 1916, or, if continued, will be made on conditions to be announced later ; (*d*) the Board will not hold Short Courses of Instruction in Art at the Royal College of Art in 1916 ; (*e*) the grants in aid of visits to Museums and Centres of Art Instruction will be suspended until further notice.

4. The Board desire to take this opportunity of giving notice that at some future date after the conclusion of the war they propose to hold one further Special Examination for the benefit of candidates who had almost completed the requirements for the Art Class Teacher's Certificate and the Art Master's Certificate when the old regulations expired. Provision will be made for the re-examination of (*a*) persons who were examined in 1914 in subjects necessary to complete an Art Class Teacher's Certificate or an Art Master's Certificate, as the case may be, but failed in one or more of those subjects ; (*b*) persons who, having the Art Class Teacher's Certificate, were examined in 1914 in Drawing from the Life or Drawing from the Antique and have obtained, then or previously, at least a Second Class in each of these subjects.

The detailed arrangements will be announced in due course, and at least three months' notice will be given of the Special Examination.

The Liverpool School of Architecture.

The prospectus of the Liverpool School of Architecture is well arranged and thought out under the able management of Professor Reilly, who has been ably assisted by Mr. Patrick Abercrombie. Mr. G. Gilbert Scott fills the appointment of "Reader" in ecclesiastical architecture, and also takes students over the cathedral works during his visits to Liverpool. The teaching of design is based on that of the Ecole des Beaux-Arts at Paris and of the American Schools of Architecture, adapted to meet somewhat different requirements.

Manchester School of Technology.

The Manchester Municipal School of Technology send a prospectus of the municipal courses for the session 1915-16, which gives a good idea of the excellent facilities existing at Manchester for the teaching of all branches of theoretic and applied science, more especially in connection with those industries which are of vital importance to the North of England ; while another prospectus is arranged for a useful part-time course in municipal and sanitary engineering, architecture and building, which should prove of great utility to architects and also to builders in the earlier periods of their careers.

L.C.C. School of Building.

The prospectus of the London County Council's School of Building, Ferndale-road, Brixton, is now before us, and, as usual, affords proof of the thorough manner in which the County Council addresses itself to questions of education within its area. The Director for Architecture and Drawing is Professor Beresford Pite, who also delivers a course of twenty-four lectures on architectural history, and a course of six popular lectures on town planning, as well as taking classes in architectural design, assisted by Mr. J. B. Fulton and Mr. H. F. Murrell.

Sheffield Building By-laws.

The Special Committee appointed by Sheffield City Council to go into the building by-laws, having fully considered the recommendation and suggestion of the Highway and Sewerage Committee with reference to By-law 20, relating to the materials to be used for damp courses, and, having heard the views of the Sheffield Society of Architects and Surveyors, the Master Builders' Association, and the Corporation's officials on the matter, and the opinion of the Local Government Board as to the fixing by by-law of a standard of bituminous damp course, have unanimously agreed to recommend the Council not to make any alteration of the present by-law at the present time owing to the difficulties surrounding the subject.

Staircase of Boswell's House.

The staircase from James Boswell's residence, emoved when the house, No. 56, Great Queen-street, was recently demolished, is now added to the Geffrye Museum. The Geffrye Museum is in the buildings known for two centuries as the Ironmongers' Almhouses on the east side of Kingsland-road.

An Electricity Scheme for Ireland.

A company will apply to Parliament for statutory powers to utilise the falls of Lough Erne, at Belleek, and of the River Shannon, near Limerick, with the object of employing the water-power for supplying electrical lighting to the greater part of Ireland. The routes of the new canals and of the lines of cable are now being surveyed and planned; canals will be constructed above the falls in order to carry the head of water to fixed points lower down. Mr. Theodore Stevens is consulting engineer to the undertaking; the superintending engineer of works is Mr. P. J. McAndrew, of Bundoran.

Housing Scheme, Shrewsbury.

At a meeting of Shrewsbury Town Council recently the Housing Committee reported on the cost of the Wingfield Gardens housing scheme, and also submitted a new housing scheme to provide 100 houses for the working-classes of the borough. The total cost of the first scheme, which provided sixty-three houses, was £13,616. The new scheme submitted is in Castle Fields, and the site has several advantages, especially in that it will connect up several streets already in existence. Plans and estimates, prepared by the Borough Engineer, Mr. W. Ward, were submitted by the special Housing Committee. Provision is made for houses rented at from 4s. 6d. to 7s. 6d. per week. The total cost, including land, sewerage, etc., is put at £22,030, and it is estimated that there will be a total annual income of £1,300, and after meeting all annual payments there will be a credit balance of £26 7s. 3d. The Report was adopted.

Uses for Gas.

The British Commercial Gas Association, 47, Victoria-street, Westminster, S.W., a co-operative and advisory body representing the chief gas undertakings of the United Kingdom, the advice and assistance of whose experts on any matter connected directly or indirectly with gas are at the public service, issues each month to business men and women a publication, entitled "A Thousand and One Uses for Gas," dealing with the practical application of gas in business and in the home. This month's issue describes the various possibilities of gas for the purpose of domestic hot-water supply from the point of view of the working-man, the middle-class suburbanite, and others. It is illustrated, and, inasmuch as it deals with the hot-water question as touching hygiene as well as domestic comfort and convenience, is of much interest.

The Associated Portland Cement Manufacturers.

In their annual report to June 30 last the directors of the Associated Portland Cement Manufacturers (1900), Ltd., state that the profits of the company, after deductions which include £84,657 5s. 8d. for repairs and renewals, amount to £455,711 3s. 8d., making, with the balance brought forward at July 1, 1914, a total of £607,282 1s. 11d. An interim dividend on the preference shares to December 31, 1914, was paid on March 31 last amounting to £62,829 16s., and it is recommended that a balance dividend on those shares to June 30, 1915, be paid at the rate of 5½ per cent. per annum. A sum of £101,261 17s. 4d. is applied to general reserve, depreciation, and sinking funds, which leaves £153,025 11s. 4d. to be carried forward.

Chapel, Deptford.

Among the interesting old buildings remaining in Deptford is the General Baptist (Unitarian) Meeting House, Church-street, Deptford. It dates from the time of Charles I., and among those who have worshipped there are Thomas Hollis, Milner Gibson, and Lord Beaconsfield. Oliver Cromwell's Secretary and the parents of Sir John Bennett were among those buried in the churchyard. It is supposed that the chapel was reduced in size towards the end of the eighteenth century, but, with the exception of some repairs carried out about twenty-five years ago, the building has not been touched for over a century. A short while ago the District Surveyor noted some bad cracks and practically condemned the whole structure. Mr. Ronald P. Jones, the architect then engaged on the building, drew up a scheme for restoration, but was called away by war duties (Staff motorist, 2-1st Anglian Division). The work was then put into the hands of Messrs. T. Chatfeild Clarke & Son, Bishopsgate, E.C., under whose direction the chapel is now being restored. So far as possible the old brickwork is being saved and the characteristics of the building retained. The corners are being rebuilt and the structure stiffened in other respects, old bricks being used for the purpose. Some of the old windows will be opened up and good glass put in. The builders engaged are Messrs. Hall, Beddall, & Co., Waterloo Bridge, S.E.

Law of Rating.

Messrs. T. Werner Laurie, Ltd., are just publishing "A Code of the Law of Rating and Procedure on Appeal," by Sylvain Mayer, B.A., Ph.D., one of His Majesty's counsel, author of "A Code of the Law of Compensation," "The Law of Agricultural Holdings," "The French Code of Commerce," etc. This is the third edition (revised and enlarged), and the author has brought the work entirely up to date, incorporating all the various alterations in the law and decisions of the Courts upon this difficult and intricate subject. It is divided into two parts. Part I. contains "The Code." This deals with (1) the rating of the different kinds of property and (2) procedure on appeal against a rate. Part II. contains the appendix, where all the statutes dealing with rating will be found fully annotated. In addition, specimens of valuation of railways, docks, gas, electric lighting, and water companies are included. Price 25s. net.

The Society of Engineers.

On the 15th inst. a number of members of this Society and their friends visited the works of Messrs. Cassell & Co., Ltd., at La Belle Sauvage, Ludgate-hill, E.C. The visitors passed through the composing-room and the stereotyping and electrotyping foundry. The Electrotyping Department deals principally with work on illustrated publications. A wax mould is taken of the illustrations and the text, and, after special treatment, is placed in a bath, where a deposit of copper adheres to the mould, this, in turn, being stripped off and afterwards backed up with metal, so as to make the plates of a thickness suitable for printing on the machine. In the Printing Machinery Department are about forty machines of various sizes and kinds, including two-colour and rotary machines. Finally, the visitors were shown the Binding Department.

Smoke and Historic Buildings.

That smoke and soot in the atmosphere do a great amount of damage to the historic monuments and buildings of this country is well known. It is the tarry, sticky, sulphurous deposit on statues, cathedral exteriors, mural paintings, and other works which is chiefly responsible for the deterioration in them noticeable from year to year. Factory chimneys are blamed for much of this effect, but domestic grates are the greater sinners. This was pointed out recently in the course of the British Association's debate on "Smoke Prevention," by Mr. H. James Yates, F.C.S., M.I.Mech.E., who remarked: "The visible pollution of the air by smoke from domestic fires, such as one sees in the haze overhanging even a small village on a calm day, is, I need hardly say, due, like the invisible pollution which accompanies it, to the burning of coal in its crude state in open fire-grates. All visible pollution, and practically all invisible pollution, arising from coal consumption can be avoided, and all the valuable by-products utilised by using purified coal-gas in place of the ordinary methods of burning coal."

TECHNICAL COLLEGE, DONCASTER.

The new Technical College at Doncaster, which has been erected at a cost of about £13,000, has recently been opened. Mr. W. P. Schofield, of Leeds, was the architect, and the work has been carried out by Messrs. Paul Rhodes & Co., of Leeds.

R.C. CHURCH, HARROW-ROAD, W.

Alterations and extensions are being made to the Roman Catholic Church at Cirencester-street, Harrow-road, W., by Messrs. E. A. Roome & Co., of Crown Works, Hackney, N.E., under the superintendence of the architects, Messrs. Williams & Major.

FOREIGN AND COLONIAL.

Output of Brick and Tile Industries in the United States of America in 1914.

H.M. Consul-General at Chicago (Mr. H. D. Nugent) reports that, according to the United States Geological Survey, the brick and tile industries in the United States produced material to the value of 129,588,822 dollars in 1914. This was a considerable decrease as compared with the value of the output in 1913, which was 143,296,757 dollars. The principal clay product in point of value was common brick, the value of which was more than one-third of that of all brick and tile products in 1914. The value of the output of common brick in 1914 was 43,769,524 dollars, a decrease of 6,365,233 dollars as compared with 1913. Dollar equals 4s. 1½d. at par.

Building and Furnishing Material, Valencia.

The *Gaceta de Madrid* of September 4 further notifies that tenders will be opened by the Municipal Authorities at Valencia, at 11 a.m. on October 16, for the construction of a building to be used as a post and telegraph office. The cost of the work is estimated at 1,574,919 pesetas (about £63,000). A period of thirty months from the date of the award of the contract will be allowed for the completion of the works. The *Gaceta* containing the conditions of contract and detailed particulars (in Spanish) regarding the stone, lime, cement, metals, woodwork, glass, paints, etc., to be employed, may be consulted by United Kingdom manufacturers and exporters at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C.

TRADE CATALOGUE.

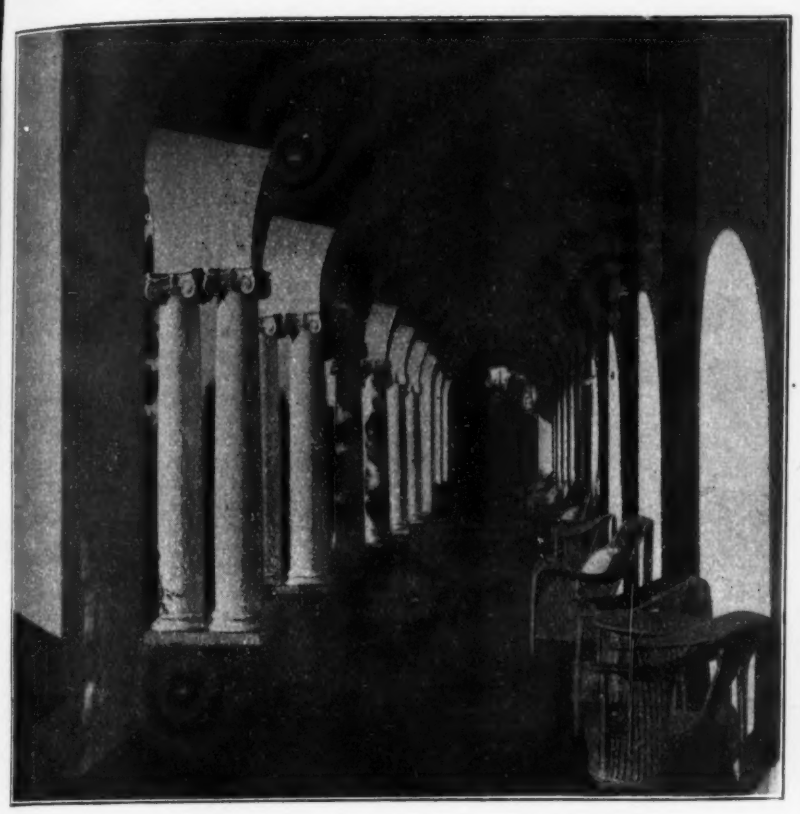
The Carron Company have issued a useful little booklet dealing with electric heating appliances, in the design of which they have expended the same artistic care we recognise in their grates and other metalwork. They are designed both for building in, where they give the effect of an ordinary grate, and in portable form, so that they can be moved from room to room. Along the former two of the best types are No. 9 Radiator and No. 36 Radiator; but the most original and effective designs are for free-standing stoves, among which we may mention Nos. 107 and 108 "Amethyst" and "Emerald." No. 230 is a good type of movable fitting, while other forms are made for use in ships and take up little space. The firm also manufactures every kind of electric cooking apparatus, which will unquestionably be increasingly used wherever the price of current is sufficiently low and where the space occupied is a matter of the first importance.

OFFICES, COCKSPUR-STREET, S.W.

A block of shops and offices has been completed recently at 21-23, Cockspur-street, S.W., the whole of the upper portion being occupied temporarily by Lord Fisher and the Inventions Board. The architects are Messrs. Metcalf & Greig, Kingsway-chambers, Kingsway, W.C. The general contractors are Messrs. Rice & Son, Stockwell-road, S.W.; the steelwork is by Messrs. Lindsay's Paddington Ironworks, Ltd., North Wharf, W.; the lift is by Messrs. Waygood-Otis, Ltd., Falmouth-road, S.E.; the iron casements, pavement lights, and copper glazing are by the British Luxfer Prism Syndicate, Ltd., Hill-street, Finsbury, E.C.; the heating is by Messrs. Strode & Co., Osnaburgh-street, N.W.; the electric lighting is by Mr. G. J. Thornton Alder, Victoria-street, S.W.; and the marble tiling in the entrance hall is by Messrs. Charles Walker & Co., Victoria-street, Westminster.

CHURCH, NEWLANDS, GLASGOW.

The new Church of the Holy Trinity, situated at the junction of Merrylea-road and Broomhall-road, Newlands, Glasgow, has recently been opened for public worship. The building has three aisles divided by stone pillars and arches, a large apse at the end of the church for the Communion table, and a smaller apse at the end of the side chapel for the font. The chamber for the organ is separated from the church by a stone arcade. The whole interior is finished in fine stonework, and all the furniture and pews are of oak. The full scheme for the church has not yet been completed, but the effect of the building will be greatly enhanced by the completion of the large tower over the porch. The church when completed will accommodate about 900 persons. The cost of the portion now completed is a little over £7,000. The architect is Mr. Macgregor Chalmers.



Loggia on Stoep: Villa Arcadia, Johannesburg.

Iron Gate to Loggia: Villa Arcadia, Johannesburg.

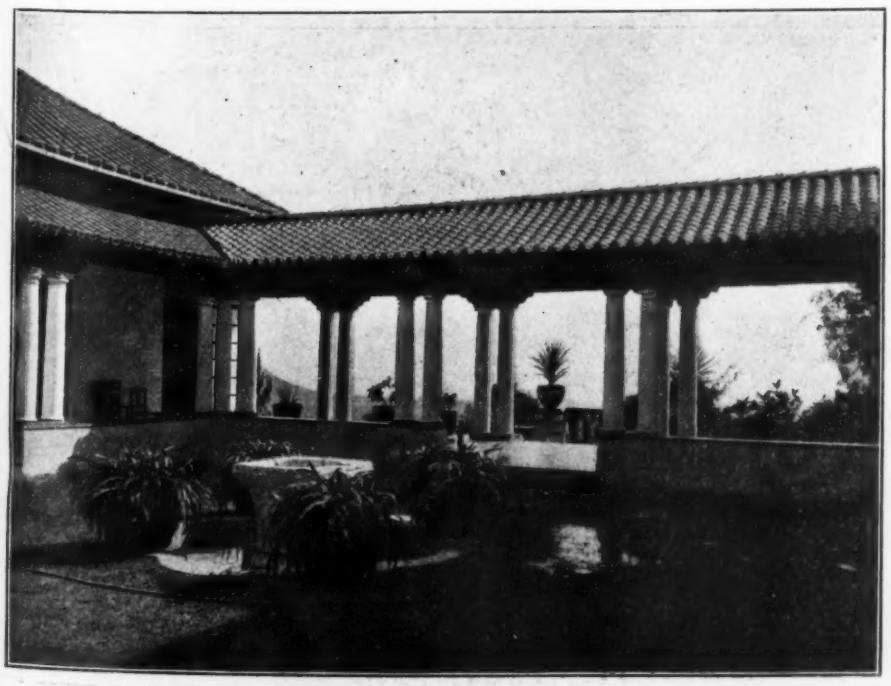
Mr. Herbert Baker, F.R.I.B.A., & Mr. Fleming, Architects.

ILLUSTRATIONS.

Tympanum, South Door, Barfreston Church, Kent.

THIS tympanum shows an elaboration which it is difficult to explain in a remote, unimportant and small village church. The church consists of a small nave, with a chancel of corresponding shape but slightly smaller dimensions. The type is that of the considerable number of Saxon churches in the neighbourhood of Dover; the apparent explanation is that some very elaborately-worked features, including the south doorway, a magnificent wheel-window now built into the east gable, and some curiously detached corbels and panels, were imported from a recently disused building and employed in the decoration of the older foundation. The upper portions of the building are faced with Caen stone ashlar, while the lower walls are of local field stones. The probable period of the tympanum is the last quarter of the twelfth century.

BERESFORD PITE.



Cloister: Villa Arcadia, Johannesburg.

Mr. Herbert Baker, F.R.I.B.A., & Mr. Fleming, Architects.

Villa Arcadia, Johannesburg.

THIS house is the South African home of Sir Lionel and Lady Phillips. The site is that of one of the first houses ever built outside the town of Johannesburg, in the midst of what is now the popular suburb of Park Town. It is on a double ledge, halfway up a steep stony kopje, the house being on the upper narrower ledge and the garden on the wider lower one. The site commands a view over rolling veld to distant mountains, such as is common enough in the Transvaal, but, focused in the house and framed by the trees, it gains in charm and inspiration. The restrictions of the upper ledge naturally dominated the plan and explains its length and narrowness. In the old garden below there were some twenty-year-old trees, which, in the almost treeless country of the high veld, were of the utmost value. It was consequently considered not advisable to disturb the existing garden, and this accounts for the fact that there are no steps down or formal terraces below the centre loggia of the house, as one might have expected in a house of this character. The ways to the garden are laterally on either side, where new formal gardens have been laid out connecting up to the wilder character of the existing planting in the centre of the site. The house, therefore, as seen from the front, must be imagined perched up upon big rocks which are blended into the foundation of the house, the lower courses being of stone. On the top of these rocks under the long loggia or stoep is an informal border, and below, between the trees, is a rough rock garden of aloes, mesembrianthemums, and many other sun-loving, dry-living plants.

The house is faced with plaster, and depends for its effect mainly on the play of sun and shadow and reflected light on plain surfaces, without moulding or enrichment of any kind except on the capitals of the columns. Critics of Mr. Walcot's coloured drawings are apt to complain that he ignores the architectural details, but in bright climates especially there must be cases, and this seems to be one of them, in which the expression of sunlight, shadow, and colour transcends those of moulding and detail.

The front has two beautiful iron balconies to the upper windows on either side, and an old Italian wrought-iron gateway in the archway at one end of the loggia. It is roofed with widely overhanging pantiles, the first ever made in the Transvaal, for the manufacture of which much credit must be given to Messrs. Lewis & Marks for having risked the experiment of their manufacture, and to Sir Lionel Phillips for the encouragement which he gave to this development of local industry. Throughout the building as far as possible everything has been made by local craftsmen. All the ironwork in the balconies, the balustrade of the staircase, most of the electric light and door fittings, and the metal works throughout, has been made by Mr. Ness, who, ever since Cecil Rhodes first employed him to make the metalwork for Groote Schuur, has been well known as the pioneer of South African craftsmen.

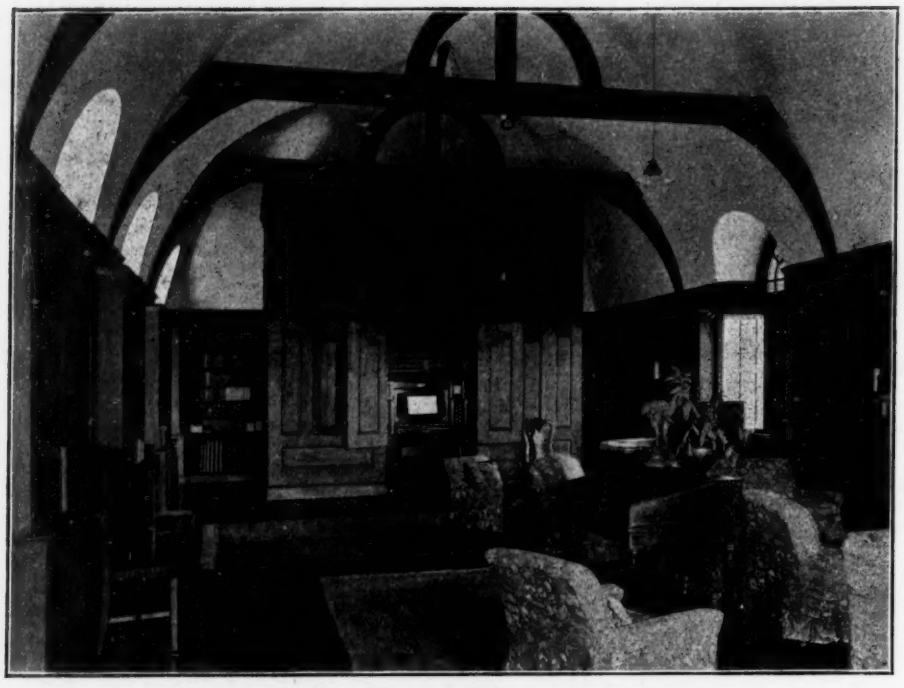
The main stoep has a groined plaster ceiling, but the cloister has a timber ceiling over the white columns, and an overhanging roof. The centre of the cloister has a plain green space of English grass, which is the greatest of luxuries in a South African garden.

The big hall, the chief room in the house, has stone walls for the hanging of beautiful tapestries. The ceiling of this room and the woodwork generally is of teak.

The builder was James Thompson, of Johannesburg, the architects, Messrs. Herbert Baker & Fleming, being personally responsible for the architecture of the building.

The South African Institute for Medical Research.

THIS Institute has been built in Johannesburg, South Africa, by the Chamber of Mines,



Music-Room: Villa Arcadia, Johannesburg.

Mr. Herbert Baker, F.R.I.B.A., & Mr. Fleming, Architects. (*See page* 223.)

for the purpose of investigating human diseases, and more especially miners' phthisis. Credit must be given to Mr. Ross Frames, the Chairman of the Committee of the Chamber of Mines, which supplied the money for the building, and to Dr. Pitchford, the Director, for the encouragement given to the architects in their attempts to make this building architecturally worthy of its more ideal attributes.

The site, a very conspicuous one in Johannesburg, is on the top of the ridge near the historical Fort which dominates the town. The town of Johannesburg was unfortunately laid out in a series of grid-iron townships, which, through the thoughtlessness or even the intention of their planners, misfitted each other, and were surveyed without any regard to the commanding features of the landscape. Consequently it was not possible to bring the new building into any scheme of town planning, except the dome, and, if the proposed extension is ever built, the twin domes of the building are placed on the axis of the vista of the important but distant Eloff-street in the centre of the town.

The building, as the plan shows, consists of laboratories, which in the southern hemisphere are, of course, on the south side, and of hospital wards on the north side for the experimental cases which are dealt with in the Institute. The building is close to the main hospital of the town, from which the new wards may be partly staffed and controlled. While the laboratory windows on the south side are large and open, those more exposed to the sun are protected by shutters, hoods, and balconies where possible.

Owing to its dry climate of half the year, Johannesburg is a dusty place, and anything but a very hard and therefore expensive stone quickly absorbs the dust and tends to become a monotonous khaki in colour. Red bricks also are not very pleasant to the eye against the prevailing red tone of the barer parts of the landscape. For architectural reasons, therefore, as well as cleanliness and economy, the building has been built of stock brick, with cast concrete bands and dressings, all of which it is proposed to whitewash, so that the building will have an easily-renewed, soft, clean, creamy appearance, which has been very well expressed in Mr. Walcot's perspective drawing. The woodwork will be painted green, and there will be tiled bands in places where protection and cleanliness are required, the red of which will give extra value to the white of the walls. The floors, ceiling, and partitions are of reinforced concrete throughout.

It is hoped that the niches will be some day adorned with portraits of famous scientists or patrons. The figure on the top of the dome consists of three snakes holding a globe on their tongues as a symbol of the spreading power of minute poison to infect the world.

Mr. John Barrow was the builder, and Messrs. H. Baker & Fleming the architects.

BOOKS.

Rivington's Notes on Building Construction. Edited by W. NOBLE TWELVETREES. (London: Longmans, Green, & Co. Two volumes. 7s. 6d. net each.)

"RIVINGTON'S BUILDING CONSTRUCTION" has been known to architects and students for forty years, and in re-editing and rearranging the new edition Mr. W. Noble Twelvetrees has accepted a task of no little responsibility and importance. The original work has stood the test of time, and, although many other books on building construction have been issued in the meantime, it has on the whole held its position unchallenged. In 1875, when the first edition was published, most of the more modern appliances in connection with building as we know it were unknown—ferro-concrete, steel casements, slab partitions, the use of electricity, and a number of patent materials were not yet invented—and our building regulations in town and country were either non-existent or else remarkable for their simplicity. The original edition was also produced in an "ugly" period of our architectural history—a fact that is shown even in such a work by the uninteresting character of the illustrations, which in no case suggested structures in which the power of artistic design is manifest. Thus in the sections relating to roofs we find no diagrams of the wonderful structure of our great mediæval roof, nor do we have illustrations of other typical examples of historical construction. This defect is still evident in the new edition, the general choice of illustrations rather suggesting the engineer than the architect, and when we call to mind many interesting examples of architects' details we have seen we feel that this want might easily have been rectified.

The classification is different from that of the original edition, the first section being Building Regulations, followed by a chapter on Sites and Foundations. Timbering Excavations, Shoring and Underpinning, and Scaffolding form the following chapters, followed by Centres and Moulds, Brickwork forming the sixth chapter of the new as opposed to the second chapter of the original work. Masonry follows as in the older edition, Walls, Piers, and Retaining Walls and Arches, Vaults and Domes forming the eighth and ninth chapters, the only counterpart of which in the original edition is the first chapter dealing with Walling and Arches generally. Chimneys and Setting for Stoves form a chapter in themselves, useful diagrams being given to show the setting of coppers and boilers, and Damp and Sound Resisting Construction occupy a further chapter. Iron and Steel Work, Steel Skeleton Buildings, Reinforced Concrete and Brickwork, and Fire-Resisting Construction all occupy chapters to themselves, after which follow the Carpentry section, which completes the first volume, and among the illustrations to which we recognise many old friends.

The second volume includes Wooden and Steel Roofs and their Coverings, Structural Plumbing, Joinery, Windows and Glazing, Stairs and Staircases, Plastering, Drainage and Sewage Disposal, Water Supply, Plumbing and Sanitation, a chapter on Sanitary Fittings, followed by others on Heating and Ventilation, Hot Water Supply, Gas and Electric Lighting, Electric Light Installation, Electric Bells and Telephones, and Hydrants.

The new edition thus covers the whole field of the architect's practice, whereas the older edition could only be of use to him to a limited extent connected with certain main items, the use of which, like the laws of the Medes and Persians, have been unchanged. The first edition was valuable to the student, but of little, if any, use to the architect in practice, while the new edition forms a work which every practising architect will find it convenient to have at hand, for it is frequently only by a reference to some trade catalogue or other that a disputed point in modern construction can be settled, while the information can be found in convenient form in the new edition of Rivington. We consider that the new work marks a distinct advance on the original, an advance, we may

Drawing-Room: Villa Arcadia, Johannesburg.

Mr. Herbert Baker, F.R.I.B.A., & Mr. Fleming, Architects. (*See page* 223.)

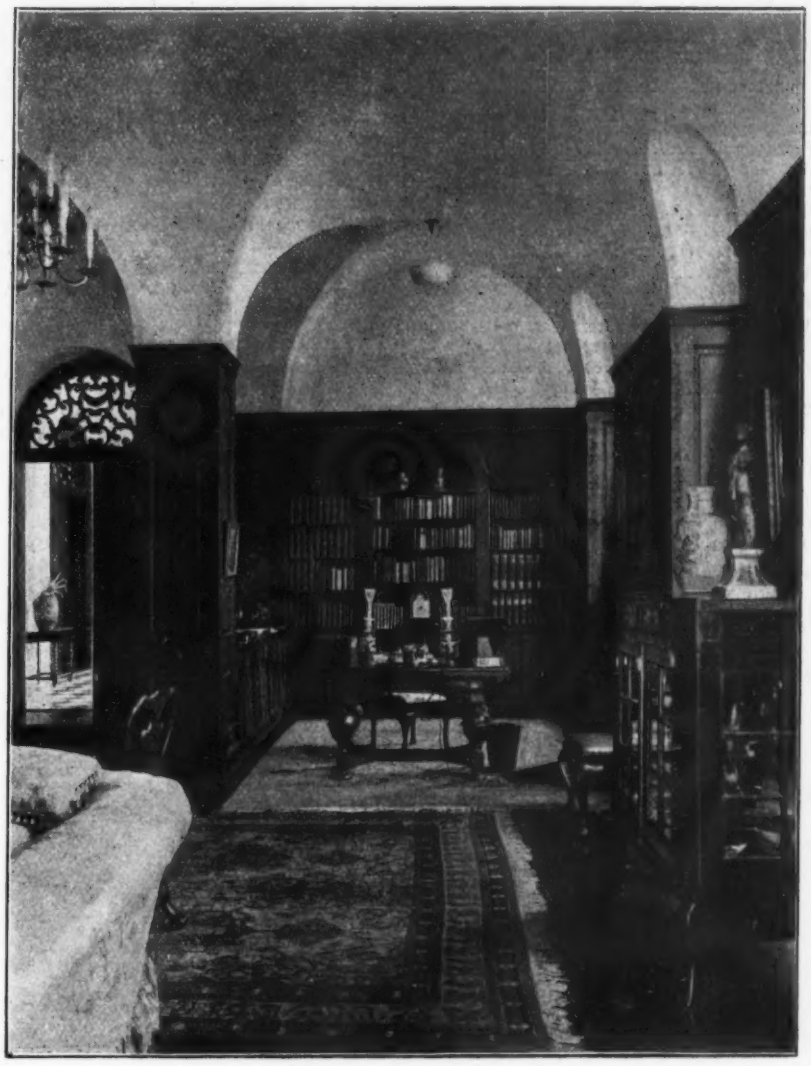
add, which has only been made possible by the great improvements in matters of construction which have come into use since 1875, and we hope the work will secure the welcome which was accorded the first edition, as it fully deserves it.

Materials of Construction. By ADELBERT P. MILLS, M.S. (London: Chapman & Hall, Ltd. Price 19s.)

THIS volume deals with the manufacture, properties, and uses of constructional materials generally, and the author states that it is an outgrowth of certain lectures and notes which have been used in his classes in the College of Civil Engineering, Cornell University, during past years. It is intended primarily as a text-book for students, but the matter has been made more detailed in some respects than would be necessary for classroom purposes, with the object of making it also useful as a work of reference. The book is divided into three main parts, the first of which deals with the materials of masonry construction, and this includes all the limes and cements in use, concrete, bricks, and other clay products, in addition to stone masonry proper. The second part is devoted to the consideration of the ferrous metals, this being the most important portion of the book, and the remaining section is given to the consideration of the non-ferrous metals and alloys and timber. Several illustrations are given throughout the text, and, generally speaking, investigational data is presented graphically by curves and diagrams, this method being thought by the author to be the best for students' use. It is an interesting book that contains a mass of useful information presented in a simple and readable form, and it should prove very satisfactory as a text-book.

Heating and Ventilating Buildings. By ROLLA C. CARPENTER, M.S., C.E. (London: Chapman & Hall, Ltd. Price 15s.)

THIS work has reached the sixth edition, and it has been very largely rewritten and considerable new matter added, with the idea of bringing it quite up to date. There are now practically 600 pages, with many illustrations and several tables. The author has arranged the various sections of the subject in a satisfactory manner, and the book opens with a statement of the general principles of pure science which apply, and this is followed by a discussion of the data and results of important investigations for showing the application of rational principles to practical construction. The various practical methods employed in heating and ventilating buildings of all kinds are then described, and notes are given of the designing of such systems, and the work is concluded with a collection of useful tables for the practical application of the principles stated. The book is well written, and the subject can be followed both as regards the theory and practice without the slightest difficulty on the part of the reader, even if he has no previous knowledge of the matters dealt with; while it can be thoroughly recommended as a complete treatise on heating and ventilating.



Library: Villa Arcadia, Johannesburg.

Mr. Herbert Baker, F.R.I.B.A., & Mr. Fleming, Architects. (*See page* 223.)

NEW COMPANIES.

THE undermentioned particulars of new companies recently registered are taken from the Daily Register compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, Chancery-lane, W.C.:—

A. TYE, LTD. (141,518), Tubs-hill, Sevenoaks, Kent. Registered September 7. To carry on business of general builders, repairers, paperhangers, decorators, painters, general contractors, carmen, contractors for public and private works, asphalt contractors, makers of bricks, dealers in gravel, stone, clay, sand, and ballast, and other minerals, etc. Nominal capital, £10,000 in 10,000 £1 shares.

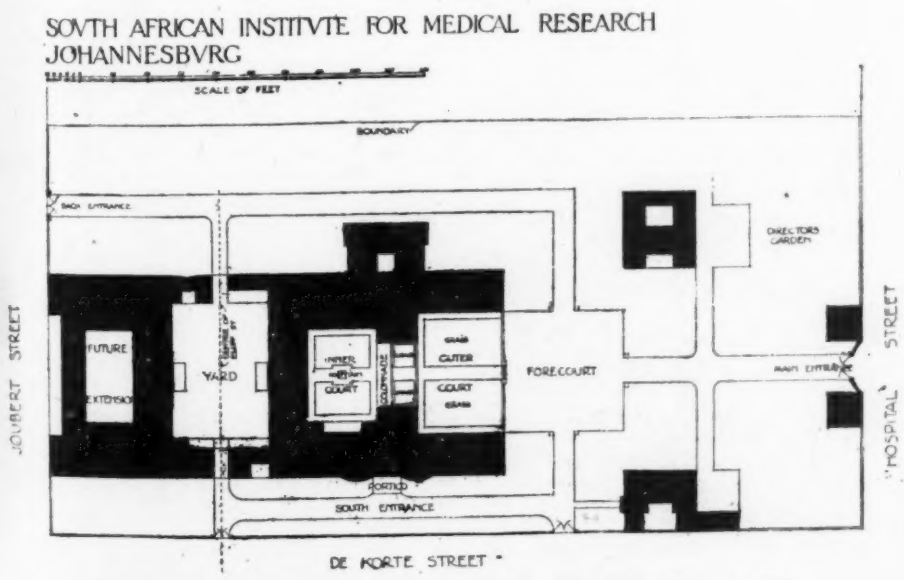
EDLINGTON FREEHOLDS, LTD. (141,521). Registered September 7. To purchase, take on lease, or otherwise acquire any lands, properties, and buildings in the County of York or elsewhere. To develop and turn to account, particularly by laying out and building, any land acquired by the company, and to carry on business of builders, contractors, quarry owners, decorators, dealers in stone, sand, lime, bricks, etc., brick and tile and terra-cotta makers. Nominal capital, £2,000 in 2,000 £1 Ordinary shares.

LEEDS MUNITIONS COMPANY, LTD. (141,534). Registered September 8. To manufacture, sell, and purchase and deal in munitions of war, and to carry on business of ironfounders, mechanical, electrical, and general engineers, builders, miners, brick and tile makers, quarry-owners, etc. Nominal capital, £20,000 in 20,000 £1 shares.

EXETER MUNITIONS, LTD. (141,472), 52, Queen-street, Exeter. Registered September 2. To carry on business of manufacturers of and dealers in guns, small arms, warlike stores, etc., mechanical engineers, brassfounders, builders, electrical engineers, water supply engineers, gasmakers, etc. Nominal capital, £5,000 in 200 £25 shares.

H. E. C. ROBINSON & Co., LTD. (141,502). 7, Strand-on-the-Green, Chiswick, Middlesex. Registered September 4. To acquire and take over the undertaking and all or any of the assets or liabilities of H. E. C. Robinson & Co., and to enter into an agreement and to carry on business of manufacturers of and dealers in ships, boats, fittings, and boat disengaging gear, ironfounders, mechanical and marine engineers, toolmakers, brassfounders, builders, electrical and hydraulic engineers, gasmakers, etc. Nominal capital, £10,000 in 10,000 £1 shares.

PUBLIC WORKS AND RAILWAYS CONSTRUCTION COMPANY, LTD. (141,552), 26, Victoria-street, London, S.W. Registered September 10. To construct, execute, carry out, and equip, manage, and control, etc., public works of all kinds, including railways, tramways, docks, piers, gas, electric light, warehouses, hotels, and other public buildings, etc. Also to carry on business of builders, contractors, engineers, etc. Nominal capital, £10,000 in 10,000 £1 shares.



Mr. Herbert Baker, F.R.I.B.A., & Mr. Fleming Architects. (*See page* 223.)

BAPTIST CHURCH, BRENTWOOD.

The new Baptist church in King's-road was opened a few days ago. The architects for the building were Messrs. Weymouth & Kimpton, and the builders Messrs. Dowsing & Davis, Romford. The cost of the work was £1,100.

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MEETINGS.

FRIDAY, SEPTEMBER 24.

Town Planning Institute.—(1) Opening address by the President, Mr. Raymond Unwin, F.R.I.B.A.; (2) Mr. Patrick Abercrombie, M.A., A.R.I.B.A., on "Town Planning Literature." 8 p.m.

Royal Sanitary Institute.—Mr. A. Wellesley Harris on "Sanitary Law." 7 p.m.

Glasgow Royal Technical College.—President's address, by Mr. Robert Moon. 7.45 p.m.

SATURDAY, SEPTEMBER 25.

Royal Sanitary Institute.—Inspection and demonstration at the Wimbledon Sewage Works. 2.45 p.m.

WEDNESDAY, SEPTEMBER 29.

Royal Sanitary Institute.—Inspection and demonstration in the district of Chiswick. 3 p.m.

THURSDAY, SEPTEMBER 30.

Royal Sanitary Institute.—Demonstration of Book-keeping as carried out in a Sanitary Inspector's Office, at the Public Health Office, Islington Town Hall. 6.30 p.m.

COMPETITION NEWS.

It must be understood that the following paragraph is printed as news, and not as an advertisement; and that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

The list of current Competitions is printed on page 236.

Schools, Tottenham.

Tottenham Education Committee has agreed to accept the designs of Mr. G. E. T. Lawrence for a new school on the Orchard House site.

BOOK RECEIVED.

RIVINGTON'S NOTES ON BUILDING CONSTRUCTION. Parts I. and II. Edited by W. Noble Twelvetrees. (London: Longmans, Green, & Co. 7s. 6d. net. each.)

COUNCIL SCHOOL, DEREHAM.

A new Council school has been erected on Crown-road for the elder boys and girls (Standard III. and upwards). The building, which has accommodation for 200 children, is a red brick structure with red Roman tiles. The architect is Mr. J. E. Burton, of Norwich, and the contractor Mr. R. Shanks, of Chatteris.

COMPETITION WITH GERMANY AND AUSTRIA-HUNGARY.

In connection with the campaign undertaken by the Board of Trade on the advice of their Advisory Committee on Commercial Intelligence to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austro-Hungarian firms, the Board continue to receive a very large number of inquiries for the names of sellers or buyers of articles of which the sources of supply or markets have been interfered with by the war. Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with these inquiries, and the weekly list of articles (No. 38) in respect of which inquiries have been received for names of manufacturers or producers is ready, and may be obtained by United Kingdom manufacturers and exporters of British goods. British firms interested, as suppliers, in any of the goods mentioned should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C.

HOUSE FOR ZAKY BEY AT DAMANHOUR.

THIS house will be built at Damanhour, about thirty miles south of Alexandria, Egypt, on a large agricultural estate, the surrounding country being perfectly flat.

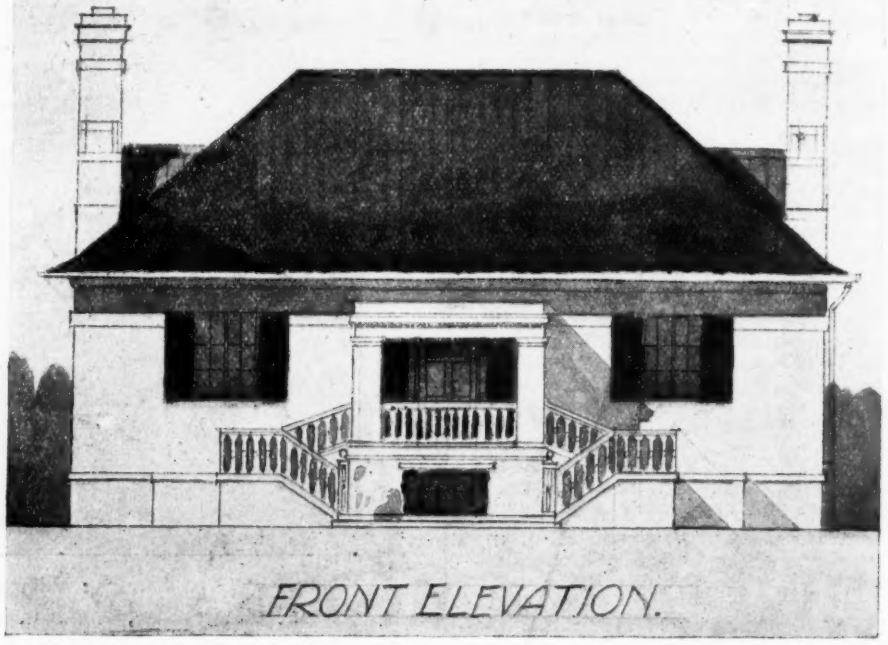
At the request of the client the usual flat roof was dispensed with and a sloping roof as shown was adopted.

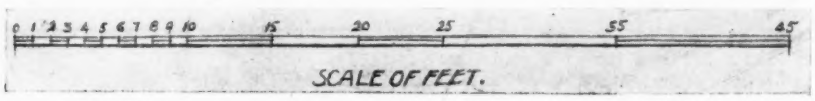
This house is only for occasional use when Zaky Bey pays his visits of inspection, hence the simple arrangement of the interior.

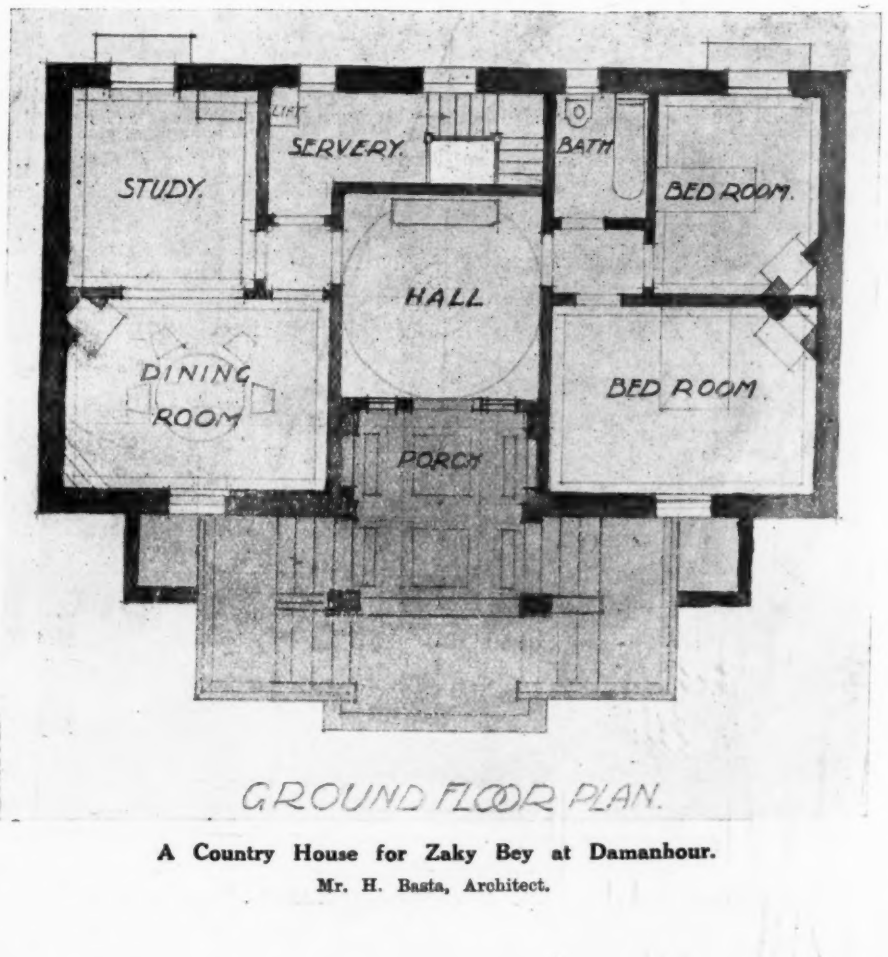
H. BASTA.

BAPTIST CHURCH, UPPER HOLLOWAY.

The reconstruction of Holloway Baptist Church has been completed, and the building reopened. The architect was Mr. H. Austen Hall, F.R.I.B.A., and the building contractors Messrs. Higgs & Hill.







A Country House for Zaky Bey at Damanhour.

Mr. H. Basta, Architect.

FIFTY YEARS AGO.

Sanitary Wants in Margate.

WE are glad to find that the few words of advice we thought it necessary to offer to the authorities have caused considerable stir, and may, it is hoped, lead to some endeavours to remedy the crying evils complained of. Several persons of position there offer to forward to us evidence of the existence of a much worse state of things than we have indicated; but we have no wish to raise a feeling abroad against the town if the much-needed improvements can be obtained by quiet representation.

[*** We give the above extract from the *Builder* of September 23, 1865.]

LIGHTING, HEATING, & VENTILATION.

FIRST REPORT OF THE DEPARTMENTAL COMMITTEE ON LIGHTING IN FACTORIES AND WORKSHOPS.

THE necessity for the provision of adequate lighting, both natural and artificial, has been brought home to us in many ways during the last decade, probably chiefly by the efforts of medical men attached to institutions, and that the work of investigation is regarded as considerable and important is evidenced by the fact that this interim Report of nearly seventy pages, representing the work of this Committee since its appointment more than two and a half years ago, indicates that much matter remains for further elucidation. Under the chairmanship of Dr. Glazebrook, an eminent physicist, whose predilection in this sphere of science is probably optics, one would expect a Report based on scientific data and experiment containing inferences which only a man with this training could draw from facts properly assembled; and, while we are not disappointed, it is a matter for congratulation that the way in which the Report is drawn up is at the same time well within the comprehension of the general lay reader.

The witnesses examined included inspectors, medical men, technical experts, and trade employers, and employed; but the Committee itself made several tours through industrial districts, examining workshops and factories, while a considerable amount of experimental work was carried out aided by the resources of the National Physical Laboratory at Teddington.

The Report begins by a short account of some of the technical terms which are doubtless to become familiar to the educated public as having a defined meaning when the necessary standards—which, as is pointed out, are yet mostly lacking—are agreed upon. Thus illumination at a point of a surface is defined as the amount of light falling upon a unit of area of that surface adjacent to the point in question, whereas surface brightness is measured by the amount of light which is returned from the surface to the eye. When a body is not self-luminous, *i.e.*, emitting light itself, this brightness must necessarily be less than the illumination, because some of the light falling upon it is always absorbed, and, as this absorption may vary from about 10 per cent. in the case of a white body to more than 90 per cent. for very dark bodies, this brings home the fact very forcibly that the amount of light requisite for a specific purpose will depend in a high degree upon the nature of the material which is being dealt with. The unit of illumination is the foot-candle—that is, the amount of lighting up of a point on a surface placed 1 foot away from and directly opposite a burning standard candle. The expression daylight factor is a valuable one in lighting investigations, and means the ratio of the illumination of any point or object in a room due to daylight compared with the amount of illumination it would enjoy were it retained in the same position with the same natural surroundings, but with the building which contains it removed.

The Report proceeds to set out the factors of good lighting, which are stated as follows:—

(1) Adequacy.
(2) A reasonable degree of constancy and uniformity of illumination over the necessary area of work.
(3) The placing or shading of sources so that the light from them does not fall directly on the eye of an operative when engaged in his work, or when looking horizontally across the workroom.
(4) The placing of lights so as to avoid the casting of extraneous shadows on the work.

The importance of the first-named—"Adequacy"—is specially commented upon, and the present Report indeed is practically confined to a consideration of this factor.

Having determined the lines of investigation, the next step was to review existing regulations as regards lighting in this and other countries. At home the Factory Acts and the Board of Education Regulations practically supply the only lighting regulations which exist for buildings, and these are scanty and very general in their nature. As far as factories are concerned, the requirement that they shall be efficiently lighted seems to comprise the gist of the regulations, though the subject is more fully dealt with in the case of schools. These, however, deal only with natural light, and we do not believe that they entirely represent the Board's latest views.

The translations of foreign regulations embodied in Appendix VIII. are interesting, and, as far as factories are concerned, Holland appears to have laid down the most detailed requirements, whereas Sweden, as we should expect, gives the most detailed consideration to the matter in relation to schools, but even here little numerical data is included, though we are told that a 25-candle-power lamp at 1 metre distance gives a suitable illumination for reading. The regulations do, however, make an important distinction between the amount of window area necessary for rooms with different orientation, which we hope to see properly considered in any new code for this country.

The tours of inspection undertaken by the Committee have resulted in some interesting pages upon the present position in factories, and criticisms thereon, and it will be surprising to many to hear the very small proportion of light—that is, the small daylight factor—obtained even in roof-lighted buildings. With a good system of roof lighting, the Report says, the illumination is very uniform, and may vary from 2 to 10 per cent. of the outside unobstructed illumination. The causes of poor lighting are laid to the charge of (1) old and unsuitable buildings and rooms partly below ground which are permissible for all trades but that of the baker; (2) obstruction to light due to neighbouring buildings, machinery, ill-arranged storing of goods; (3) to dirty windows (we would like to add also unsuitably-glazed windows), which are very prevalent; (4) to dirty walls and ceilings, which, in towns and with dirty trades, soon lose their reflecting power. As regards artificial light, the defects are ascribed to (1) too few or too weak light sources; (2) old-fashioned methods of lighting; (3) inadequate supply, *i.e.*, faults at the source of generation; (4) neglect of upkeep; (5) obstructions by machinery or fittings; (6) shadows due to the above or the worker or his material. Now all new regulations are a burden, and it behoves those who make them to justify their necessity, hence the Committee's investigations on this matter are not the least important feature of the Report. In Appendix IX. will be found the results of a statistical investigation of the connection between accidents and lighting made from a special return of all the reported accidents for 1913 and part of 1914. From the data collected it is shown that such accidents as might be attributable to bad lighting are much more frequent during the winter than the summer months, and since natural light is, generally speaking, much superior to artificial light, it is inferred that bad artificial light involves more accidents than good. Few persons, we imagine, will quarrel with this hypothesis. Damage to health and eyesight from bad or improper lighting was investigated for the Committee by Mr. F. R. Cross, F.R.C.P., and his results are given in Appendix XII. In the light of the Reports which have been made by school medical officers on this subject in recent years we must express some surprise at the results of his inquiry, which appear almost negative. Inquiries were sent out to about three hundred oculists and medical men with some knowledge of factory cases, and we must either conclude that the adult and the child cannot be compared in this matter, that the school doctors have overstated their case, or that the factory doctors have not dealt with the problem sufficiently fully. The effect of lighting on output is a very important matter, and there is no doubt that efficient provision will always pay a very handsome rate of interest in the workroom. One or two cases in support of this view are referred to, and it would be a great incentive to better lighting if factory owners would compile and publish any possible statistics on this point.

In Appendix XIV. an account is given of the experimental-room at the National Physical Laboratory, which was 24 ft. by 12½ ft. in size, and possessed means for altering both the wall coverings and the illumination, the latter by the use of filament lamps, with resistance in circuit, whereby the candle-power could be controlled. Workers were placed in this room, the illumination of which was gradually increased for various operations, such as sewing fabrics of various colours, until the worker considered the light sufficient. Six women workers were separately employed, and their opinions, which are given, agree very closely as to the amount of light required. Power of distinguishing details, such as type of various sizes, were also tested by members of the Committee under various conditions of illumination in the room.

The results of these tests, coupled with the extensive series of measurements made in the factories visited, which are fully dealt with in Appendix XV., and which involved in all some four thousand measurements, give us, finally, some definite recommendations, which conclude the Report. These begin with a recommendation in general terms, including power to make orders as standards are agreed upon, the wording being as follows:—

1. There should be a statutory provision—
(*a*) requiring adequate and suitable lighting in general terms in every part of a factory or workshop, and
(*b*) giving power to the Secretary of State to make Orders defining adequate and suitable illumination for factories and workshops or for any parts thereof or for any processes carried on therein.

The necessity for considering the term "adequacy" in reference to the work in question is forcibly brought home by the following observation:—

In cotton weaving, for example, the optimum illumination varies with the colour of the yarn, the fineness of the yarn, the style of weave, and other circumstances, and a single standard prescribed to cover cotton weaving generally would err in some instances in the direction of prodigality, in others of insufficiency.

Turning to the general illumination of factories, the Report places these under three headings:—

A. The illumination of workrooms or parts of workrooms where work is in progress, that is, of the *working area* of the factory.
B. The illumination of passages, stairways, lobbies, etc., and places in workrooms or other parts in factory premises over which persons are liable to pass but which are not parts of *working areas*.
C. The illumination of open yards and approaches.

The term "working area" meaning the part of the room and immediate gangways where machines and operatives are placed. The means for lighting workrooms are classified as by:—

(*i.*) General lighting, whereby an illumination is produced which is approximately uniform throughout the whole room;
(*ii.*) Localised general lighting, whereby an illumination is produced which is approximately uniform over a portion or portions of the room in question;
(*iii.*) Local lighting, with the object of lighting some particular portion of a machine or locality by an arrangement of individual lamps acting independently of one another; and
(*iv.*) Combined local and general lighting.

The conclusion reached is that:—

2. Over the "working areas" of workrooms the illumination measured on a horizontal plane at floor level shall be not less than 0·25 foot-candle, without prejudice to the illumination required for the work itself.

And the last sentence means that upon the actual work in progress the illumination should much exceed this minimum.

Ships and shipyards are excluded from the present Report as they present special difficulties as regards standards and are to be dealt with by the Committee later.

Iron foundries are the subject of special criticism, and, from our recollection of visiting such works at night, the following recommendation will mean a very drastic revision of nearly all present installations:—

3. In all parts of iron foundries in which work is carried on or over which any person is ordinarily liable to pass the illumination measured on a horizontal plane at floor level shall be not less than 0·4 foot-candle.

In passages, stairways, and lobbies the illumination at the floor level is recommended

at a minimum of 0·1-foot-candle, and one-half this amount upon open spaces, such as yards and roadways. Finally, the compulsory cleaning of windows is enjoined as necessary.

These regulations are proposed to be applicable to both natural and artificial lighting, and no discrimination is made between different lighting systems.

While paying a high tribute to the work of the Committee, we feel that certain difficulties in the application of these regulations remain to be cleared away. A given workroom, for example, often serves for dealing with a great variety of material of highly variable absorptive character. Again, in the design of a building the necessary window area may be governed by factors not predeterminable, *i.e.*, working details only vaguely decided upon; but even before this we must be told for the design of window areas upon what unit of natural light calculations are to be based to avoid the constant recourse to artificial light in the daytime. We await the further Reports of the Committee with interest.

NOTES ON HEATING, VENTILATION, AND LIGHTING.

THE worker in our large cities has by this season of the year resigned himself to having his evening meal by artificial light, and within a few weeks warming will also be necessary to his comfort. It may therefore be beneficial to consider the questions of heating, ventilation, and lighting, for it is often by these matters that the reputation of the budding architect is made or marred.

As regards dwelling-houses, the open fire is likely to continue for many a long day, and whatever may be the merits of the Russian stove, which has frequently been referred to in the Press lately, we cannot believe that it will be welcomed by the inhabitants of this conservative island. The ventilation also is likely still to be a matter of open windows, with perhaps the greater use of electric fans to keep air in motion.

In reference to lighting, there are two alternatives that can be used by the householder, gas or electric lighting. As regards appearance, both gas and electric fittings have been so much improved in design during the past few years that either may serve as decorative adjuncts to the room in which they are used.

Let us, however, turn from the home to the public buildings, in which so much of our time is passed either in work or enjoyment. It is quite possible to warm our offices by open fires, but in restaurants, theatres and cinema theatres, concert halls, and places of worship this is impossible, and a proper system of heating and ventilating must be installed.

Heating.

Hot-water heating is carried out either by the low or high pressure system. The former is much the more usual form in this country, and, broadly speaking, is likely to give the greatest satisfaction in most buildings.

With it the water is heated in the boiler, and, as it becomes lighter, it is driven along the pipes and through the radiators by the pressure of the heavier cold water. A quick flow is essential to the success of this system, and a separate pipe for return should therefore always be provided, and the main service pipe carried direct to the top of the building.

With regard to radiators, the heating surface is given in most catalogues, and a good working rule is to allow 1 sq. ft. of heating surface for each 100 cubic ft. of air, unless there is a great deal of glass surface, in which case 90 cubic ft. should be taken for each square foot of heating surface.

The wise architect will usually allow his consulting engineer to work out his scheme for both heating and ventilation, as the amount of glass area, covering of walls, positions of rooms in building, and uses to which they are put so affect the calculations that the subject for large buildings has become one needing expert knowledge. There is one thing that architects often overlook, and that is the fact that all hot-water pipes and radiators tend to attract dust, which settles on the walls behind them.

It is a common sight to see a black smudge behind each radiator in a building, but this can be obviated by fixing a shelf a few inches wider and longer than the radiator, about ¾ in. above the top of the coil.

When radiators are cased this is, of course, obviated, but arrangements should always be made by forming the front of the casing as door or movable panel in order that access may be gained to the taps and joints and to allow for cleaning of the tubes. A few points that should be borne in mind are:—

Radiators should preferably be fixed under windows in order to prevent downdraughts.

Under balconies and in the lower portions of rooms small radiators should be used and provision also made for ventilating them.

A large number of small radiators will give better results than a few large ones.

In lofty rooms with clerestories, large skylights, or with windows at base of dome a ring of hot-water pipes should be run at the bottom of windows to prevent downdraughts.

With domes and skylights these can generally be arranged and hidden in a cornice or other architectural feature.

Another most important point is always to consult the engineer as to the size of boiler flue required, for we have known cases in which flues partly built have had to be pulled down owing to their not having been large enough.

The high-pressure system is more elaborate, and consists of pipes of small bore, strong enough to resist 100 lb. per square inch hydraulic pressure, the boiler being of larger pipes built into a coil, and the whole enclosed with firebrick and outer iron casing. The heated water rises to an expansion tube at the highest point of flow main, and thus compresses the air in it.

The pipes are much smaller than those needed by the low-pressure system, and greater control is gained over changes of temperature; but the disadvantages of the system are that pipes must be often filled, and pumping is also required to free the air bubbles from the water.

There is also a risk of freezing in cold weather owing to the small bore of pipes, and when the system is in use the pipes are uncomfortably hot; but its great disadvantage from a health point of view is that the dust in the air becomes charred. The system, however, is very useful for stoves and ovens and for boiling water in workshops and restaurants.

Steam heating is becoming more and more used for large buildings, institutions, and factory works. Where large power and heating plants are installed there is no doubt but that it is a most economical system. It allows a building to be quickly heated with small pipes and at a relatively low cost, but highly-skilled attendance is needed, and much dust is raised owing to the rapid currents of air set up.

Electric heating has not yet been developed far enough to become a common system of heating for large buildings, but there is no doubt that the near future will see many developments in this form of heating.

Ventilation.

It is remarkable that with the increasing desire for open-air life our places of public resort are allowed to be so backward in the matter of ventilation.

Public Health Acts and by-laws make rules for schools and workshops, but, whatever may be done as regards the latter, the dust and heat inseparable from many trades will continually tend towards unhealthy conditions.

That being so, much more stringent rules should be enforced for the proper ventilation of restaurants, tea-shops, and buildings of public resort.

The atmosphere of a number of cinema theatres was lately analysed, and in almost all of them the air was found to be most poisonous and foul and a menace to public health.

It should be made a rule that all buildings of public assembly should be planned that sunlight can be admitted to them by windows.

In theatres and suchlike buildings shutters can be easily devised that will exclude all light and at the same time be easily opened.

The London County Council have lately begun to call on owners to form windows in the external walls of existing cinema theatres, and this rule should be extended to insist on windows on both sides of the building. The continuous performance or continuous use of any place of public assembly should be abolished, and especially in theatres where smoking is allowed the building should be cleared every two or three hours, the air drawn out by fans, and afterwards the windows on both sides opened for from fifteen to twenty minutes.

It is foolishness to insist on the air of schoolrooms being changed several times per hour and then to allow children, tired by their schoolwork, to sit in stuffy buildings where no sunlight ever enters and where ventilation is but primitive.

With large buildings modern ventilation practice is usually confined to two systems. In the first the air is warmed and washed and then forced into the building, and in the second air is admitted behind radiators and through openings and drawn out by fans. In large cities air should always be washed before entering the building, as it removes the winter dirt and in summer cools the air as well as removing the dust. The air shafts should be straight, with slow bends if same are necessary, with either circular section or rounded corners, and a counsel of perfection is to form them that they could be cleaned at intervals, for in many buildings the air is washed and warmed to the required degree, but passes through long shafts that are impossible to get at, and the sides of which must in process of time be covered with grime.

It should also be remembered that it is impossible to ventilate every corner of a room, and small electric fans should therefore be provided for such positions; but such fans do not ventilate a room, their only service being to keep the air in motion.

No scheme should ever be considered that allows air to enter at a velocity of more than 3 ft. per second or to be withdrawn at more than 5 ft. per second.

Several outlets on a ceiling will give better results than one large one, and these should be connected by curved circular shafts to the main outlet trunk, which should be made to increase in size till it reaches the fan chamber. Arrangement should also always be made that easy access may be gained to the fan itself.

From many points of view the "Plenum" methods find much favour, for in large crowded buildings the air must be forced in to give the required amounts, and it is soon found that exhaust fans are necessary to remove the vitiated air. The whole subject of ventilation is at present a controversial matter, and we would suggest that the matter should be dealt with by a select committee. New York has lately taken the lead by appointing a State Commission on Ventilation, consisting of medical men, chemists, a ventilating engineer, and the officer of the Department of Health. An experimental chamber has been arranged for, and research is being conducted into the conditions of various types of buildings. The first report confirms the view that temperature, humidity, and movement of the air, and its freedom from dust, bacteria, and odour are the primary essentials of ventilation. Conditions in the United States are, however, different in many respects from those in this country, and we would therefore suggest that the R.I.B.A. should take up the subject in order to obtain agreed and reliable data.

Lighting.

In a short article it is impossible to deal with all the various types of gas-producers that are on the market, but the majority of public buildings are lighted by either gas or electric light. The L.C.C. and the authorities in many large towns insist on electric lighting being on two circuits, with gas as an additional means of lighting in theatres, cinema theatres, and many large buildings, and it is a wise precaution to submit full plans to the authorities as early as possible during the erection of the building, for to alter the position of a box when building is near completion is often an expensive matter.

With regard to lighting, arc lamps find most favour outside buildings, though the new half-watt lamps may soon serve the same purpose. These lamps are very economical, as they give standard illumination, whilst using only half the current.

They are also useful internally with inverted globes. The system of reflecting the light from the ceiling is coming more and more into favour, as it reduces strain on the eyes and gives a much softer light; but it must always be remembered that quite double the candle-power is required to give equal illuminating power in the room below.

The most charming type of lighting for theatres and public buildings, especially where decorative vaulted and domed ceilings have been introduced, is concealed lighting, in which the lamps are arranged behind the cornice. In several buildings lately erected the lighting to domes, etc., has been arranged behind a series of globes arranged in the ribs of the dome.

This can be made very effective both by day and night, and has the further advantage that the lamps can easily be got at for renewals—a matter of great inconvenience in many buildings with lights behind cornices. In lofty buildings with heavy fittings hung from the ceiling provision should always be made to allow the same to be lowered near the floor for the purpose of cleaning and renewal of the lamps.

During the past few years many forms of vapour lamps have been introduced in which sealed glass tubes containing mercury, nitrogen, or carbon dioxide are used, and it appears likely that we shall see many improvements in the near future, and that scientific research will give us a means of lighting our buildings and at the same time obviate the excessive eye-strain which is tending more and more to make us a spectacled nation.

We have said nothing as to the choice of fittings, for these can be now obtained in every type and style, and the improvement in their design during the past few years has been remarkable.

MODERN GAS FIRES AND ECONOMY IN BUILDING.

IT has now become a recognised fact that modern gas fires have immense possibilities as heating agents, and some notes on types of modern gas fires and their possibilities as regards present and future economy in building may be of interest.

Radiant Heat.

There are many reasons for their increased popularity, among which the following points may be noted:—They are now constructed to give forth the major portion of their heat in the shape of radiance, or the same kind of heat as that given off by the sun, thus providing indoors a climatic condition which far more closely resembles natural outdoor warmth than was obtainable by the old pattern gas fires, which gave off a large proportion of their efficiency in the form of convected heat, which, of course, does not resemble the live heat given off by the sun, naturally dear to the hearts of our countrymen, who certainly cannot usually complain of a superabundance of this in outdoor life.

The Hygienic Aspect of Modern Gas Heating.

Gas heating has been extensively adopted by the medical profession, and gas fires can now be found in many hospitals, nursing homes, dispensaries for the prevention of consumption, and similar buildings (we understand that there have been many large installations of gas fires recently fitted in war hospitals and Red Cross buildings). This medical recognition is naturally calculated to give the general public a feeling of security as regards their hygienic properties.

The Age-Old Domestic Problem.

Their convenience and labour-saving qualities are so well known that it is scarcely necessary to refer to these, but it is perhaps worth mentioning that the domestic labour problem tends to get more and more acute as time goes on, and the housewife is perforce bound to regard with appreciation any appliance that reduces the amount of labour necessary to run her household in the smoothest possible manner.

Modern Improvements.

Modern improvements in gas fires which have helped to popularise them also include the following good points:—

As the burners are now very scientifically constructed and are easily regulated and adjusted a perfectly aerated flame is now obtainable.

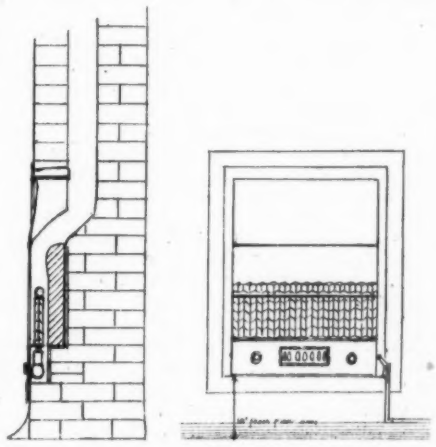
The fires are very silent when burning.

The burners are easily removable for cleaning purposes without taking the fires to pieces.

Duplex taps are coming increasingly into use, allowing the user, by a turn of a tap, to cut down a wide fire to a narrower one of equally cheerful appearance, instead of, as in the past, turning the whole fire down, which, of course, satisfactorily reduced the heat, but practically destroyed the cheerful appearance of the fire. The design, finish, and appearance of gas fires has improved so much that there is no comparison between those at present produced and the past horrors, whose principal aim in life would seem to have been to offend the eye of the architect, builder, and, last but not least, the unfortunate being who had to live with them and see them day after day, because, in spite of their appearance, they were to him so necessary from other points of view that he could not see his way clear to dispense with their use.

The Architect and Builder and the Portable Gas Fire.

Now, while all these points as regards the type of gas fires known as the portable—that is, those designed to stand in front of the existing coal grate—are naturally of great interest to architects and builders, they do not intimately concern them as regards the construction of buildings which they are erecting, because when dealing with the question of heating a building, if it is decided to instal coal grates, these are installed of a type suitable to the requirements, and it is then left to the occupier, if he subsequently uses gas fires, to stand them in front of the coal grates and to choose those that look the best. His choice in the past was usually strictly limited to getting something which did not match with anything. We may remark, in passing, that coal grates themselves have not been without reproach in the past. But even now, when he has a varied choice and gas fires can be obtained that are harmoniously adaptable to any scheme of interior, or strictly plain ones that can be fitted to what may be called nondescript grates and mantels, the standing of a gas fire in front of a coal grate cannot be looked upon as absolutely the best result that could be obtained, either from the point of view of economy or the best artistic appearance; though it must be admitted that there are gas fires that, by the removal of the coal grate canopy or by covering



Gas Stove in Hospital.

up the whole of the fire grate with asbestos sheeting, asbestone, or similar suitable material, can be made to look very well indeed and as though no coal grate were there.

The Wastefulness of Using Two Appliances for One Purpose.

Have we now arrived at the position when we can to a greater extent abolish the wasteful process of first putting in a—sometimes expensive—coal grate, and then standing a gas fire indefinitely, and frequently permanently, in front of it? There must at the present moment be hundreds of thousands of coal grates which have had gas fires standing in front of them for years, and which are never likely to be again utilised for the purpose for which they were originally constructed.

The Sentimental Desire for the Appearance of a Coal Fire.

Of course it is quite understood that there will always be a great demand for coal grates, and where these are fixed, and the occupiers desire a gas fire but do not wish to stand one of the portable type in front of them, as they favour the piled-up effect of a coal fire instead of the more stereotyped appearance of the portable gas fire, there are several types of gas fires now on the market that can be fixed into any type of coal grate, ancient or modern, which when in use have a passable resemblance to a coal fire.

Coal Grates that Rapidly Fall into Disuse.

But what of office buildings and rooms in dwelling-houses or flats where the intermittent use of heat is required, such as drawing-rooms, bedrooms, studies, etc., where in many cases, though there *is* a coal grate, the labour and trouble attached to lighting the fire and clearing up after its use has been dispensed with practically ensures its disuse, until eventually a gas fire is installed and the coal grate is thrown out of action, becoming from then onwards purely a waste of material and labour, apart from the fact that, as before stated, the gas fire would look better had no coal grate been there? It must be remembered that in the long run no one gains from waste, and everyone gains from moving and being in artistic surroundings.

The Architect's and Builder's Difficulty in the Past.

Architects and builders, of course, frequently consider the possibility of fixing or preparing for gas fires as substitutes for coal grates in buildings they are erecting, but until recent years there were no gas fires that they could fix with complete satisfaction, or without a feeling that their scheme of decorations would thereby be spoiled, and in the past when such work was carried out it was probably at the special request of a gas fire enthusiast, who had gas fires of a very special and probably expensive type, such as imitation logs, etc., fitted to tiled openings.

A Wide Choice of Gas Grates now Available.

We have now arrived at the point, however, when the gas stove manufacturers are prepared to supply a wide range of gas fires, or what may be called gas grates or gas interiors, that can be built in or stood back to tiled bricks or slabs. These can be obtained in any one of the various authentic styles, such as Jacobean, Georgian, Adam, etc., according to the style of apartment and mantel to which they are to be fixed, or else in strictly plain design, *i.e.*, what may be spoken of as no more than a plain band of metal containing the fire bricks, burner and fireclay uprights or radiants, such plain fires to be fixed to tiled bricks or slabs when the mantel is one of a nondescript design. The same applies to gas dog-grates suitable for fixing in tiled openings, where no coal dog-grate need be supplied.

Building Economies that May be Effected.

There are, of course, several economies possible in buildings where initial preparation is made for gas fires.

First, there is no need to set coal grates in position, but tiled bricks or slabs may be fixed instead, leaving suitable openings against which the gas grates or gas interiors may be stood.

Second, the size of the chimney flue could be materially reduced, as a gas fire does not need—indeed it works better without—such a large flue area as a coal fire, because the quantity of products of combustion the chimney flue is required to deal with or remove is so very much less, and there is no soot deposited to reduce or partially obstruct the flue area. The largest gas fire made does not need a chimney flue with an area of more than 36 sq. in. The most suitable chimney flue for the flue outlets at present constructed to gas fires is one of an oblong shape, say, 12 in. by 3 in., or thereabouts.

Third, owing to the smaller flue area required, if suitable flues were constructed when buildings are erected there would be an increase in floor space in every room, because the present depth and width of chimney breasts would be reduced. The heat would also thereby be more evenly distributed about the room, as the radiance from a coal or gas fire cannot penetrate into the fairly deep alcoves now made on either side of the chimney breast owing to its projection into the room.

A More Extensive Trial Suggested.

It must not be considered that we advocate a sudden wholesale installation of gas grates or interiors in buildings that are being or are about to be erected, though it is within our knowledge that buildings have recently been erected wherein no coal grates have been installed, tiled openings having been left for gas fires in every room; but it might well be worth architects' and builders' consideration as to giving such a system a more extensive trial, by installing gas grates or interiors in office buildings where coal grates, if installed, would probably very early in their career be masked by portable gas fires, or to instal them in those rooms in dwelling-houses where intermittent heating is usually required, and where coal grates, if supplied, would probably be

Corner of a Drawing-Room in Model Home at "Hazelwood" Estate, Dumbreck.

seldom or never used, gas fires being subsequently installed; such apartments as drawing-rooms, studies, bedrooms, doctors' consulting and waiting rooms, etc., for instance. One or two rooms in each house or flat could then have coal grates installed, in order that those who preferred the changing appearance of the coal fire would not be without the opportunity of enjoying this, and a coal fire could also be used in a room that would be likely to be in constant hourly and daily use throughout the winter.

The Intending Occupant's Point of View.

It is certain that an intending occupant would view with greater favour a house, flat, or office fitted complete for his use, rather than one in which he would subsequently have to spend money to hire or purchase and to fit against the coal grates the inevitable gas fire for use in the rooms where he needed intermittent heating and the saving of labour.

Some Recent Interesting Installations.

We know of one eminent architect who at his own residence, which was recently built, adopted the plan set out above—that is to say, he had gas fires fitted in marbled or tiled openings in every room except one, which has a coal grate for sentimental and constant use.

It is worth mentioning also that the members' bedrooms at St. Stephen's Club, which has recently been rebuilt, are all fitted with gas grates set back to tiled openings, no coal grates having been fixed.

The details of a unique gas fire installation in an operating theatre that was recently built in an important private hospital in London should be of interest to our readers. In this case only a flat wall could be provided, and no chimney breast, projections in such a room being, of course, as far as possible "taboo."

When consideration was being given to the problem of heating this operating theatre it was decided that if gas could be applied in a suitable form it would fulfil all the requirements, viz., to provide a considerable amount of heat at a moment's notice and at an economical rate. No dust or dirt was to be emitted, and no attention or clearing up was to be required. It was necessary that the heat, when it was no longer required, should be capable of being dispensed with as rapidly as it was generated. Of course, in this case a coal fire or an ordinary portable gas fire to stand in front of a grate would not have conformed to all the rules, and would not have been permissible, but the difficulty was got over by providing a shallow flue in the wall and actually building into the wall one of the types of gas grates we have mentioned.

We have shown rough sketches of this in elevation and section, and it will be seen that the stove practically consists of little more than a copper band and a canopy, which are fixed back into the marbled wall, containing the burner, firebrick, and necessary fireclay uprights or radiants. The fire was a wide duplex one, and the knobs shown at the bottom take the place of the usual taps to control it, making it possible to use all the fire or only the centre, leaving the outside radiants out of use.

COMMERCIAL CONFIDENCE.

THERE are many who can be extremely wise after the event, but comparatively few who can so learn from the past as to avoid mistakes in the future. At the outbreak of war opinion was equally divided between those who held that the duration of the war was likely to be very short and those on whom the unexpected conditions had a paralysing influence, and who, in the historic words of Mr. Asquith, were inclined to "wait and see." A year of war has resulted in a condition of affairs which has surprised most of us. In the first place, we all recognise that the length of the war is likely to be greater than we expected; in the second place, the fears of the alarmists are seen to have been unjustified, because a large bulk of the normal trade of the country is still being carried on, thanks to the absolute protection afforded by the British Fleet; and those who have marked time probably now recognise that they have also lost time by so doing. Again, it is clear that the successful prosecution of the war will make claims on our resources in men and money which we did not anticipate, and will also tax the ability of the Government to the uttermost. There are two clear facts emerging from these conditions—one, that all of us must assist the authorities in meeting any claims they may make; the other, that it is of all times the one in which those who are not called on to give personal services should use every effort to supply, by their energy and determination in keeping the normal business of the country going, those who are called away. In this connection Sir William Lever has recently given what seems to be sound advice to the trading community, *i.e.*, "What the business man needs at present is courage and a cool head; and the trader who keeps his nerve and does not relax his efforts will assuredly win."

It is obvious that the material side of war is wasteful, as it destroys the results of aggregation of the wealth of the community and renders it poorer and less able to meet the claims made upon it. It is also clear that those who are not producing in some capacity or other represent a loss to the general community, as they consume without giving any return, and that those who give way to despondency are enemies to the public weal.

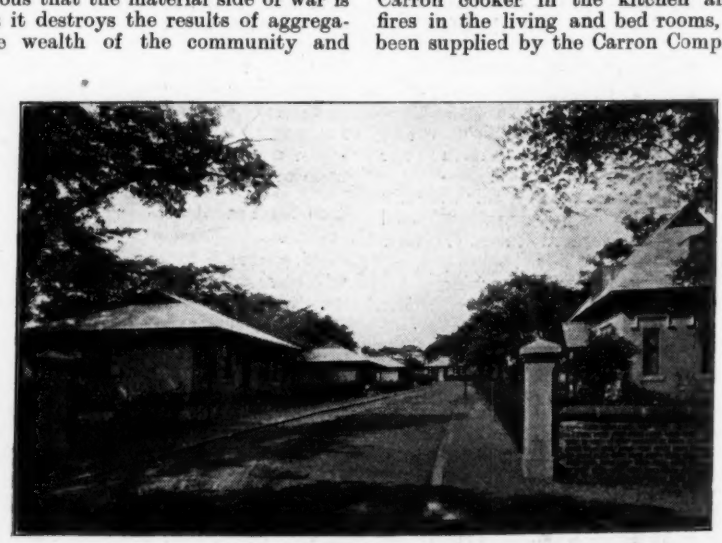
It therefore behoves all who are connected with the great industry of building, and who cannot be employed in other capacities more directly useful in the exceptional conditions of the time, to do what they can in their capacity to make it possible to carry on the normal industry of the country. Architects must exercise more than usual care in eliminating the necessity for unnecessary expense, contractors in using all their energy and skill in carrying out work as promptly and as inexpensively as possible, and the building trades in obviating labour disputes, which mean loss of time and expense.

The manufacturing firms should press on business as far as possible as usual; the one great object is to show that the present is a good period in which to put up buildings which will be wanted in the immediate future. Those who do this will find that, instead of marking time at the nation's expense, they have done their best to prevent unnecessary dislocation, and have brought nearer the eventual restoration of prosperity, which is bound to follow if we have reasonable confidence and energy.

At the present moment, when we are confronted with the necessity of providing temporary hospitals, barracks, and other accommodation for the new armies, both in this country and abroad, the question of heating, hot-water apparatus, and other work connected with building are more than usually important to the architect and contractor, and we are glad to be able to point out that our manufacturing firms are answering to the demands made upon them, and in the following notes of what special firms are doing we think our readers will find much that is instructive and useful:—

ELECTRICAL APPLIANCES.

Glasgow is a centre well fitted for experiments, as its inhabitants are unusually enterprising and the municipal services unusually efficient and well managed. Mr. George Hamilton, a well-known builder, has built a suburb at Hazelwood in which electricity is used as the sole heating and lighting agent. It is situated near the Dumbreck terminus of the Corporation tramways, within easy reach of the city, and several types of houses, with four, five, and six rooms respectively, have been erected, which we illustrate by typical exterior and interior views. In the smaller houses all the rooms are on one floor, while in the larger ones the bedrooms are upstairs. Mr. Hamilton sells the houses on easy terms; the greater proportion of the purchase-money can remain on interest for a term of years. Nine houses have been sold, others are in course of erection, and the building of others is to be put in hand. Their electrical appliances include an electric water storage tank, supplied by the Falkirk Iron Company, a Carron cooker in the kitchen and electrical fires in the living and bed rooms, which have been supplied by the Carron Company, Messrs.



One of the Avenues at "Hazelwood" Estate, Dumbreck, near Glasgow.

Belling & Co., Falkirk Iron Company, and Townshend's Art Metal Company. Hot water for washing is procurable in ten minutes and for baths in twenty minutes. It is said that the water-heaters which have been in use for a year have in no case given any trouble. With the cookers supplied, fifteen minutes suffices to cook a breakfast, and we are informed that in a typical house last June the cost of lighting, cooking, heating, and hot water averaged 6d. a person, while for the third week in the month it amounted to 4½d. a person only. Current is supplied from the Corporation mains, the price for lighting, heating, cooking, and hot water averaging ·77 per kelvin. The experiment is one which should be watched with great interest, as electricity is the cleanest and among the most labour-saving of the methods by which heat can be generated; but we are afraid that such an experiment for the smaller house, where economy is of the first importance, is only feasible where, as in the case of Glasgow, extensive use and good management have served to reduce the ordinary cost of current.

Among many of the best electrical accessories it is pleasing to note that the Mazda lamp is British made, being produced at the firm's factories in Rugby. They were, it is stated, the first durable metal filament lamps put upon the market, their durability depending on the drawn-wire filaments used, which was invented as the outcome of experiments made in the firm's laboratories. They are adapted for use where a large volume of light is required, and, when used instead of arc lamps, it is claimed that the trouble and expense of adjusting, trimming, and repairing are saved. The lamp, when installed, needs no attention; it has no mechanism or moving parts, and is adapted to all voltages, either direct or alternating current, and is independent of frequency. The filament of the lamp does not burn in a vacuum, but in a bulb filled with inert gas, which is below atmospheric pressure, and therefore cannot explode. The intrinsic brilliancy of the Mazda half-watt lamp is three times that of the ordinary tungsten lamp, and the brilliancy necessitates the use of suitable diffusing bowls or spheres when internal lighting is required, for which purpose the "Eye-Rest" Indirect fittings or Semi-Indirect Velasia bowls give good results.

The British Thomson-Houston Company, Ltd., in their last descriptive list, give full particulars of their two and three phase induction motors, which meet the demand for alternating current motors suitable for industrial purposes. The polyphase induction motor, shown in the list, has been used with success in almost every industry, a result due to its simplicity, reliability, and high efficiency over a wide range of loads.

The induction motor consists of two essential parts, the stator or stationary part forming the frame of the motor, and provided with a winding to suit the speed, the number of phases, frequency, and the voltage of the supply circuit, and the rotor or revolving part, which is secured to the motor shaft and rotates with it. The rotor is provided with a winding which is not electrically connected to the stator winding or to the supply, and the current in the rotor is due to the inductive effect of the stator. The rotor winding is either permanently short-circuited or else connected to slip-rings mounted on but insulated from the shaft. Machines fitted with rotors of the former class are termed "squirrel-cage" motors, and those with motors of the latter type "slip-ring" motors. The former are of simpler construction, and their efficiency and power factor are slightly higher, while the absence of moving contacts renders them practically sparkless in operation, and they are therefore specially suitable for use in mines and other dangerous positions. On the other hand, the great advantage of slip-ring motors is that they will exert full load or over full load torque when starting, while taking current approximately equal to the full load or corresponding overload current, which is effected by inserting resistance in the motor circuit through the medium of the slip-rings.

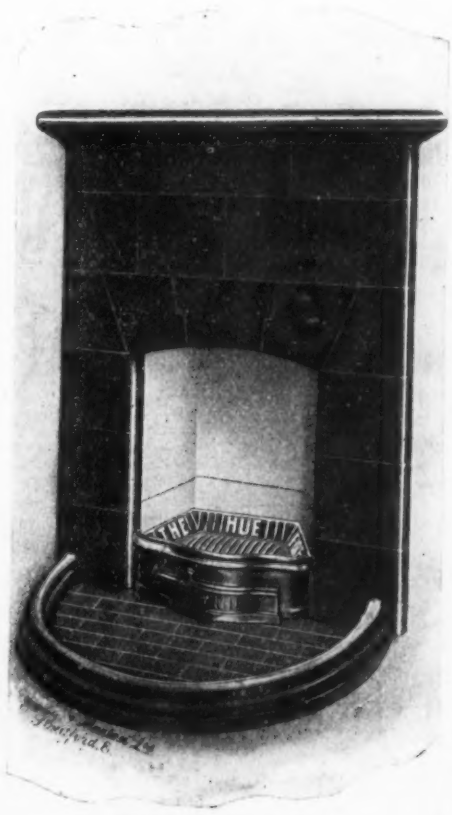
Portable Stove for Camps.

HEATING AND VENTILATION.

Messrs. Nicholls & Clarke, of 6–8, High-street, Shoreditch, are patentees of an excellent portable stove, which we illustrate, and which is in great request for camps and military institutions. It is made of very heavy metal with large ovens, and, as it can be used for any desired period and then removed, it meets the demand of those who have to use temporary buildings excellently.

The "Hue" Fire, which we illustrate, is made by Messrs. Young & Marten, Ltd., of Stratford, London, and has many advantages, since it can be placed in position without interfering with the existing fireplace, and is very economical in the consumption of coal, which also means that there is less trouble in keeping the fire going. It is a barless fire designed on the most modern principles, and costs about 15s. only. It is found to be most useful in cases such as often occur now when houses are used as temporary hospitals, as its use does not entail the mess, trouble, and expense incurred in making structural alterations, and, in common with many of the better and newer heating appliances, present circumstances rather make for increased production and use than the reverse.

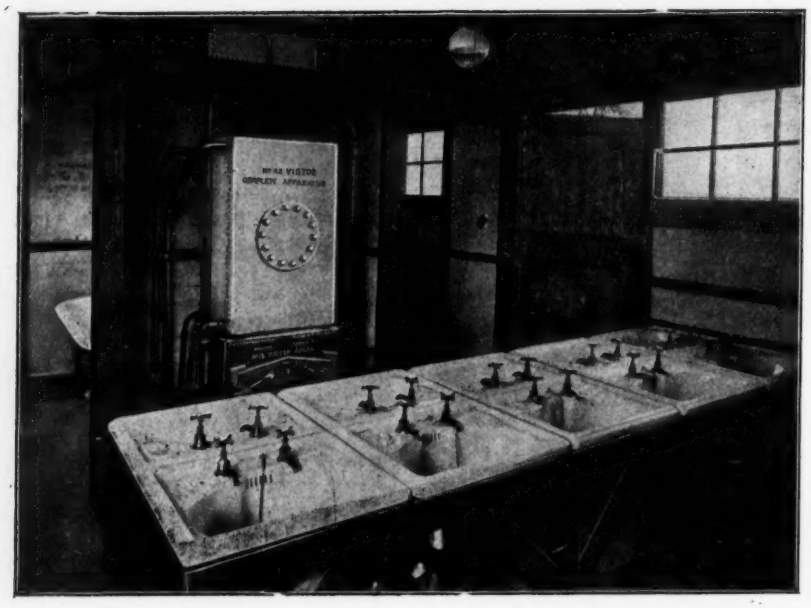
The "Hue" Fire.



The "Hue" Fire.

Messrs. Benham & Sons, Ltd., of 66, Wigmore-street, W., have instituted the "Perfect" low pressure system of hot water heating, the features of which are the small size of the pipes used, which is claimed to be simple, perfect in action, and productive of an even temperature throughout. No pipe trenches are required, the boiler can be placed in any position, and the circulating pipes run irrespective of level. The feature of the system is the employment of a circulator, which is placed on the return main and can be worked either by a small electric motor, hot air, or petrol engine. The working cost of the motor is so small that it is more than covered by the saving of fuel effected by its use, and it is cheaper to heat the building with the circulator running than it is with the circulator cut off. The pipes can be hidden in skirtings, floors, and chases, besides which Messrs. Benham have patented an "Invisible" system of heating.

Mr. Thomas Potterton, of Cavendish Works, Balham, has made a name in connection with his ingenious patents for gas heater hot-water apparatus of various kinds, of which the Victor Complete Automatic Gas Heater Hot-water Apparatus, which we illustrate, is a good sample. Each apparatus consists of a "Victor" boiler, a cylindrical or rectangular hot-water tank, thermostat, safety valve, emptying cock, pipe connections, cut-off valve, concrete blocks, and tray, making a complete installation as far as heating, storing, and circulating are concerned.



Lavatory supplied by "Victor" Boiler.

In fixing all that is necessary is to lay on a cold connection to the tank, carry an expansion pipe, with branches for draw-offs, provide the flue pipe connecting the boiler and chimney, and connect gas. In action water is produced suitable for use without circulating the contents of the storage more than once. This result is attained by proportioning the size of the flow and return pipes in relation to the gas consumed, which is a special feature in gas heater hot-water supply introduced by the "Victor" system.

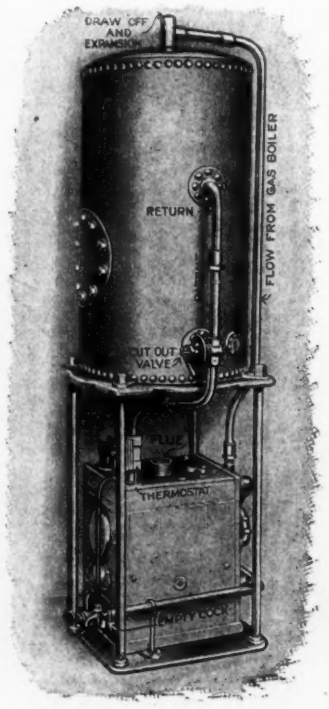
With the "Victor" system of pipe connections the contents of the cylinder heat from the top, storing the water at the temperature at which it circulates from the boiler, which registers 120 deg. with cold water at an average temperature, so that it is possible to heat a small quantity only and shut off the gas, assuming that no further demand exists for the time being. For such purposes the system may be said to act almost to the advantage of the instantaneous water-heater except that instead of the water running quickly into the sink or basin it is stored and can be drawn quickly. The cut-out valve seen at the right-hand of the apparatus causes the water to return to the boiler when the upper half of the storage has circulated through it. It can also be fixed to existing kitchen ranges, while in the case of large buildings two boilers can be installed. Victor gas boilers have been installed in many cases in connection with housing schemes for munition workers in different part of London, one of the lavatories of which we illustrate. Among other large orders forty have been supplied to the Third London Hospital at Wandsworth, and twenty-one for the Territorial Force Association, County of London, at Ruskin Park.

Messrs. Robert Boyle & Sons, of 64, Holborn-viaduct, London, are almost too well known to require a notice. Many among us are inclined to fight shy of mechanical contrivances, and the Patent Air Pump Ventilator with which Messrs. Boyle's name has been associated has always commended much support. Professor Grant says of it, "It is constructed on sound scientific principles, acts in strict accordance with the laws of nature, and cannot fail to operate," and its extended use throughout the country for every class of building, including over 5,000 churches, shows the confidence which is felt in it. The firm also manufacture air pump ridge ventilators and concealed ventilators, all constructed on similar principles for positions in which their use is advisable from an æsthetic reason.

The Sturtevant system of warming and ventilating is well known on both sides of the Atlantic, the firm having done much useful pioneering work for schools, factories, and every other class of public and industrial building. It is a simple Plenum system in which the incoming air is heated, washed when necessary by passing through screens over which water flows, and then carried by a system of graduated ducts to every part of a building. The fresh-air inlets in this, as in most mechanical systems, are placed at a high level, while the extract ducts are taken out near the floor level. The advantage of this in factories where there is both dust and often dirt is obvious, and wherever large undivided areas have to be heated the advantages of such a system are very obvious. The firm employ skilled engineers, who are adepts from long experience in laying down a heating system so as to secure the maximum amount of efficiency. Their London offices are at 147, Queen Victoria-street.

Central heating is bound in time to replace all other systems, except in those cases where appearance and luxury are the objects sought and the expense of service is no consideration. Even in these cases the advantages of an even temperature will probably secure the elimination of the ordinary grate except as an accessory of the heating scheme. Among the firms who have devoted attention to the subject of heating in all its branches is the National Radiator Company, whose head offices and showrooms are at Nos. 439 and 441, Oxford-street, and whose works are situated at Hull. The various specialities manufactured by the firm are distinguished by the title "Ideal." It is pointed out that the advantages of the "Ideal" hot-water warming system are its low cost, which is about 1d. per day per room, or one-tenth that of electricity at ½d. per unit, one-seventh that of gas, and one-fourth that of gas radiators or open fires with coal at 25s. a ton. The whole house is warmed by one fire. It is clean and labour-saving, while each radiator is fitted with a valve for independent regulation, and in a rented house the apparatus can be arranged for easy removal and refitting. The one fire only requires attention a few times in the twenty-four hours, and is confined to the scullery.

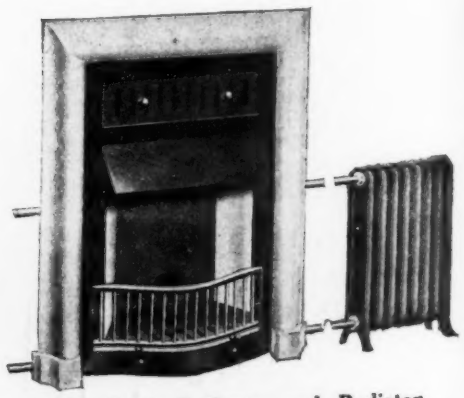
The firm manufacture the "Ideal" domestic self-contained boiler, in which the fire is entirely surrounded by water, and 75 per cent. or more of the heat is transmitted to the boiler, giving ample hot water for two baths for a penny, whereas it is calculated that with the ordinary kitchen boiler 80 per cent. of the heat escapes up the chimney. The fuel used may be coke, cinders, and household refuse, practically all the heat value of which is extracted. The use of these boilers makes the hot-water supply independent of cooking, which can be done by gas or electricity. The firm make an excellent series of boilers, described as "Ideal 9 Boilers," built up in sections, and made for water and for water and steam. The smoke flues can be arranged in any position desired. These will be found to be neat in appearance and very serviceable, and even in the smallest sizes can be supplied with an insulated steel jacket covering all exposed surfaces. The company's radiators can be obtained in any form, and a speciality is the Tuscan radiator deflecting shield, by which the heated air is deflected into the room, thus doing away with damage to curtains and wall coverings, while a special dining-room radiator is made with an oven inserted into its surface. In fact, the company may be said to have covered the whole subject of hot-water heating thoroughly and efficiently.



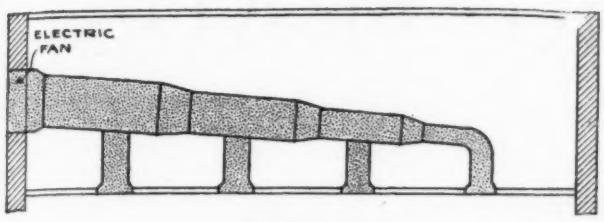
The "Victor" Boiler.

The Steam Water Non-Pressure unit system of heating devised by Messrs. Revy, Phillips, & Co, 181, Queen Victoria-street, is said to have the advantages both of the low pressure and hot water systems of heating, and is a small bore system, the advantages of which are appreciated by many.

Messrs. E. H. Shorland & Brother, Ltd., of Manchester, have a deserved reputation for the excellence of their heating and ventilating appliances, the best known of which is the Manchester grate, which has been adopted for many hospitals, schools, and infirmaries, and which, good as it was originally, has been still further improved and developed lately. It can be made with a boiler attached, which supplies hot water to neighbouring radiators, thus forming a cheap hot-water system within a limited area. The grates are arranged with fresh air inlets, thus acting as effective ventilating agents. The double-fronted open fireplace Manchester grates, which are made with ascending or descending flues and are encased in faience of various colours, having a large warm air inlet flue between the two fires at top, are as good heating agents for hospital purposes as have been devised. The firm's natural ventilating appliances are well known and need little description. It will suffice to say here that they are designed on far better architectural lines than many similar appliances on the market, and Messrs. Shorland have also given attention to that most useful ventilating agent, the electric fan.

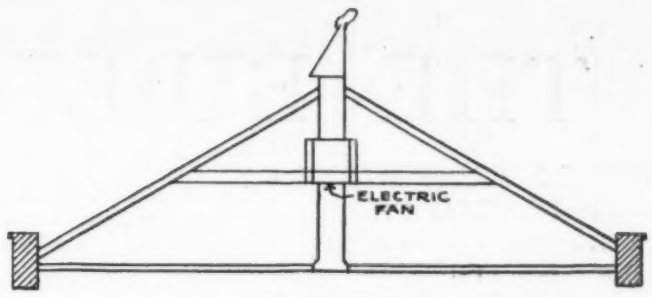


"Manchester" Grate and Radiator.



System "A."

Mechanical Ventilation.



System "B."

Natural and Mechanical Ventilation.

When a natural ventilation system is employed for permanent buildings it is advisable to have the extracting cowl made of a more permanent material than galvanised iron or zinc, which, owing to the war, are now considerably advanced in price. Copper ventilators are now extensively used in many cases, and are found to be very little more expensive in first cost. They will last as long as the building itself without painting or any attention. Copper lends itself to artistic workmanship, and can be easily worked up to suit any design. Messrs. Ewart & Son, Ltd., of Euston-road, N.W., have recently produced copper ventilators which are well designed and can be relied upon to give satisfactory ventilation without any attention. When mechanical ventilation is preferred, electric exhaust fans can be employed, fixed preferably in the roof and connected by galvanised-iron ducts to openings in the ceiling as shown in system "A."

It is often found better to fix two fans on opposite walls, as when this is done one fan can always do its full work from whatever direction the wind is blowing. Another advantage is that when the auditorium is only partly occupied one fan will be sufficient to extract the foul air, with a consequent saving in current. System "B" shows a combination of natural and mechanical ventilation. An extracting ventilator is fixed on the roof so that the hot foul air can escape with the ordinary atmospheric pressure. An electric fan with special open blades to allow the air to pass freely is fixed under the ventilator, so that if sufficient up-draught is not obtained by natural means the electric fan can be switched on to accelerate upward movement.

This system may be found a little more expensive than system "A," but better results are obtained, and "natural" ventilation takes place even when the electric fan is not running. Even when the building is closed a continuous movement of air takes place, and it does not remain full of foul air and smoke when closed, as is often to be found the case when system "A" has been adopted.

Health and Ventilation in Churches.

Although cleanliness is popularly supposed to be next to godliness, yet in many churches conditions inimical to health prevail such as the authorities would neither tolerate nor permit in a theatre or picture palace. To obtain or retain their licences proprietors of places of amusement must provide efficient sanitation, including ventilation and heating. The London County Council determine and enforce the number of air changes to be secured per hour, and thus indirectly the amount of heating surface that must be installed to maintain a comfortable degree of heat, whereas in churches and chapels, where all classes attend, we frequently find an absolute lack of recognition of the germ theory of disease or of even the elementary laws of health. Even now, perhaps congratulating themselves that the wall space is not to be taken up by radiators, the congregations walk or shuffle to their pews or chairs, diligently scraping their feet upon the gratings of the heating apparatus to remove from their boots the unsightly accumulations of mud and filth. Cheered by the genial warmth of the hot water pipes in the trench below, the germs multiply apace, and, with the warm upward currents of air, are disseminated without fear or favour amongst the worshippers. Luckily, some churchwardens, presbyters, and deacons are becoming aware that what is insanitary in a picture palace is equally unhealthy in a church, and, even at some expense, steps are taken to remedy the existing evil. For instance, at Emanuel Church, South Croydon, the existing hot-air apparatus will be superseded by a hot-water radiator system, part of which is now being installed. The boiler is a "2B" Challenge, of six sections, manufactured by Messrs. James Keith & Blackman Company, Ltd. Owing to the high efficiency of this type of boiler, and the small amount of floor area taken up by it, the Challenge boiler is peculiarly suitable for church work, especially as so little labour or attention is required. Radiators are being placed in positions allowing of the best distribution of heat with as much regard as possible for the general appearance of the building. It is intended eventually to make good all the floors where gratings were previously inset. The main reproach against the original apparatus was that even with an excessive fuel consumption it was not capable of maintaining an equable temperature throughout the building, the prevalence of down-draughts greatly intensifying the discomfort of the congregations.

DUST AND HEALTH.

We have received a copy of the Milroy Lectures (1915), delivered by Mr. Edgar L. Collis, M.B. (Oxon), His Majesty's Medical Inspector of Factories, which have been reprinted from *Public Health* (the official organ of medical officers of health). The lectures are principally devoted to the subject of the effects of dust inhalation, and are illustrated by numerous interesting diagrams. Mr. Collis states, in conclusion, that some dusts, such as that produced from coal, have no power of producing disease, but even may have some inhibitory influence on phthisis. Other dusts, such as limestone and plaster of Paris, are negative in their action; but most dusts have an injurious influence, and, of all dusts, that containing silica is the worst. It is interesting to note that masons have long recognised the connection between the smell of what they call "sulphur" given off when certain stones are dressed and the dangerous character of the dust generated, and that such a smell is caused by the presence of particles of silica (oxide of silicon). Silica dust possesses certain qualities—the smallness, which makes it possible for particles to be carried into the alveoli; hardness and angularity, which renders the particles capable of causing irritation; as well as chemical properties, which makes it possible for them to modify the colloidal structure of protoplasm; and smell, which is possibly due to a vapour as yet undetermined, which is given off when silica is fractured. Investigation of this nature is extremely valuable and useful in the interests of the health of those engaged in different forms of manual labour.

PATENTS.

APPLICATIONS PUBLISHED.*

16,075 of 1914.—Georg Wingenfeld: Moulding machines for artificial stone slabs.

16,181 of 1914.—Marton Lofkovits: Method of making and connecting the eyes of wall-ties or anchors.

16,801 of 1914.—Edmund Lawrence Hann and Christopher Kearton: Shaft, well, and tunnel linings, and the like.

17,145 of 1914.—Edward Charles Robert Marks (G. Polysius, firm of): Method of burning cement, ores, and the like materials.

17,372 of 1914.—Joseph Paschen: Rivetless lattice girder.

17,713 of 1914.—Marshal Dayton Tillman: Hot-water heating systems.

17,829 of 1914.—Eugen Muller and Ernst Eichert: Method for the manufacture of magnesian cement.

18,520 of 1914.—John C. Pelton: Production of coloured cement, whiting, Paris white, or the like.

19,760 of 1914.—David Thomas: Dredging, excavating, and quarrying apparatus.

20,617 of 1914.—William Sammons Hubbard: Means of operating the discharging doors of excavating buckets.

20,751 of 1914.—William Rich: Systems or apparatus for indicating fires in compartments or rooms or spaces at a distance.

21,413 of 1914.—Robert Mills: Pipe joints.

21,546 of 1914.—Joshua Brittain and Herbert Charles King: Rotatable window-sashes.

22,541 of 1914.—Samued Ebenezer Spencer: Suspended travelling scaffolding.

772 of 1915.—Robert William Hill and George Edward Clare: Bricks, blocks, or slabs for walls and partitions.

1,081 of 1915.—John Stratton and Ernest Alexander Claremont: Fixing of glazing-bars.

1,238 of 1915.—John Needham & Sons, Ltd., and Walter Needham: Manhole and like covers.

1,642 of 1915.—Frank Willis: Construction of hollow concrete floors and roofs, and the method of reinforcing same.

2,791 of 1915.—George Amborn: Chain pipe wrenches.

3,365 of 1915.—Edmond Pamart: Boilers for supplying hot water or steam for heating purposes.

5,500 of 1915.—Aktiebolaget Lean: Machines for producing hollow bricks.

5,505 of 1915.—Alfred Henry Corn and Edward Johns & Co., Ltd.: Lavatory, sink, or urinal basins, and their means of attachment to walls.

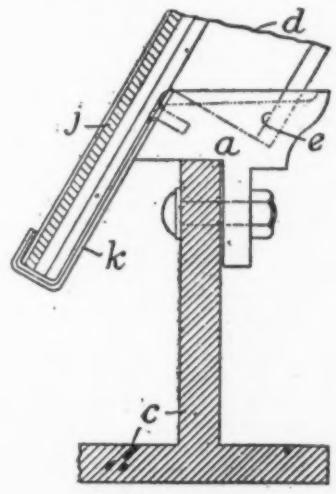
9,534 of 1915.—Edwin Bright Openshaw and Henry Sidebottom: Back cheeks or false backs for domestic and like firegrates.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

SELECTED PATENT.

8,403 of 1914.—John Schofield Porter: Glazing roofs.

This relates to brackets for supporting the lower ends of glazing-bars *a*, consisting of a block portion *d*, provided with a recess *e*, sunk at an angle corresponding to the end of the bar, and a shank portion, which can be bolted



8,403 of 1914.

to the ordinary gutter *c*. The block portions carry attached or integral stops *k*, having hooked ends to support the lowest row of glass sheets *j*. The upper surface of the block portions may be dished out to provide for the escape of condensation water collecting on the glazing-bars.

THE BUILDING TRADE.

PROPOSED PROHIBITION OF WHITE-LEAD PAINT:
THE AUSTRALIAN VIEW.

WE have received the following contribution from an Australian correspondent:—

The announcement that the Select Committee appointed by the British House of Commons to inquire into the use of white-lead among painters had brought in a recommendation that the use of white-lead be prohibited caused a mild sensation among painters and decorators in Australia. A similar prohibition has been talked of in Australia, but those who have advocated it have been in the minority and under a suspicion that their advocacy was influenced by interested motives. In Australia white-lead is very largely used. With the exception of a very small percentage, the whole of it comes from England. The Customs returns do not show the value of white-lead imported, but the item, "Paints Ground in Oil," shows that from Great Britain Australia imports annually paints to the value approximately of £300,000. The United States of America is the next largest exporter to Australia, imports from that source being £30,539 in value.

The figures given above cover principally materials for painters' use (householders' paints come under a separate heading), and by far the larger proportion of it is made up of white-lead, in paste form, ground in oil.

On first sight it seems unwise for Great Britain practically to extinguish an important export trade, and, in so doing, give a lift to Great Britain's foreign competitors. As suggested by the present high prices of zinc spelter (August 10) in Great Britain, viz., £105 per ton (in Germany the price is £31), the recommendation plays into the hands of the foreigners, and particularly the Empire's enemies. As the figures indicate, Germany and Austria practically control Europe's output of zinc.

The substitutes suggested for white-lead, namely, zinc white and lithopone, have been tried in Australia and found very unsatisfactory as compared with white-lead.

The most satisfactory paint on exposed wood for the Australian climate has by long experience been found to be paint made of white-lead and raw linseed oil. The chief defect of paint made from white-lead and linseed oil is that in course of time it chalks, especially when pure white is used, but of the two evils painters prefer chalking to cracking. Chalking renders repainting a simple matter. White-lead paint may be repainted without any ill results, but the use of zinc white almost invariably makes it necessary to burn off the old paint and start afresh from the wood.

Any action that the trade in England may take in the way of protesting against the recommendations of the Select Committee being given effect to by Parliament will have the hearty endorsement of practically the whole of the painting and decorating trade in Australia and New Zealand. The matter of prohibiting the use of white-lead in Australia was discussed at the Annual Conference of Master Painters and Decorators of Australia, held at Brisbane in June last, when, after a discussion on a paper submitted by an English manufacturer of a white-lead substitute, a motion was unanimously carried that "Conference affirms that there is no satisfactory substitute for white-lead."

Figures supplied by the Government Statistician show that deaths from lead-poisoning in Australia for a period of three years number twenty-one. Of these ten were of persons in the building trades, three manufacturing, two miners, two other industrial workers, one "person of independent means," and three "of persons described as dependants." An average of three deaths per annum in Australia of persons in the building trades (including, of course, plumbers and others who are not engaged in painting) is hardly a sufficient justification for prohibition of the use in Australia of paint made from white-lead. Unless painters in England are much less cleanly in their habits than in Australia, it is difficult for members of the trade here to understand why the use of white-lead should be prohibited there.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ARBROATH.—Extension of factory, for Messrs. M. C. Thomson & Co., Ltd.; additions to mill, for Messrs. Douglas Fraser & Co.

Ashby-de-la-Zouch.—The U.D.C. have passed a plan presented by the Grammar School Governors for a stable to be erected at Mr. W. M. Hatton's premises, Market-street.

Barrow.—Boiler-house, for Messrs. Vickers, Ltd.; two houses, Harrel-lane, for Mr. R. Robinson; two houses in Longroens-road and three in Clarence-road, for Messrs. J. & H. Neal & Son, Ltd.; seven houses, Roose-road, Mr. S. Barnett; bungalow, Croslands Park, for Mr. W. Tickle; bungalow, Newbarns Village, for Mr. J. Cox; bungalow, Parkhouse-road, for Mr. J. Benson. Music and refreshment pavilion on Walney Island, for the T.C. The T.C. Surveyor has been informed by Messrs. Vickers, Ltd., that before long they will be employing a largely increased number of men at their yard, and that it is proposed to build fifty temporary wooden buildings, each to accommodate 100 men, and also 250 additional houses on Walney Island in order to find house accommodation for these men. It is Messrs. Vickers' intention to erect several big workshops in connection with their already big establishment at Barrow, and some of these buildings are now in course of being built.

Beddington and Wallington.—Plans passed by the U.D.C.:—County of London Electric Supply Company, control house, Bridges-lane; Messrs. Page & Overton, additions to The Windmill; vicar and churchwardens of St. Michael's, new vicarge, Milton-road; Messrs. Claridge & Son, new house.

Bedford.—The R.D.C. have passed plans for a residence on the Putnoe Estate for Mrs. Fordham.

Bedworth.—Scaffolding has been erected around the tower of Burton Hastings Parish Church, in order that a thorough scheme of restoration may be carried out. The scheme will involve an outlay of about £1,000.

Bexley.—Plans have been approved for aeroplane works at Gravel-hill, for Vickers, Ltd.

Birtley.—The P.C. are asking the Chester-le-Street R.D.C. to undertake the erection of 500 houses, and are also approaching the Birtley Coal and Iron Company on the matter.

Brazil.—The *Diario Official* (Rio de Janeiro) publishes a Decree approving revised plans and specifications presented by the "Companhia Mogyana de Estradas de Ferro e Navegaçao" in connection with the construction of the railway from Igarapava to Uberaba, involving the erection of a bridge over the Rio Grande. The estimated cost of the works to be carried out has been increased from 4,166,000 milreis to 4,493,537 milreis (*i.e.*, from about £214,800 to £231,700, at current rate of exchange).

Bristol.—The Docks Committee have approved an application from the Morrell Contracting and Trading Company to rent about 100 sq. yds. of land behind the traffic office at Avonmouth Dock for the erection of a temporary office and store.

Bushey.—Plans passed by U.D.C.:—Additions to St. Andrews', Aldenham-road, for Mr. C. W. Burge; additions to Cromaboo, Nightingale-road, for Mr. W. J. Fitzgerald.

Calne.—Messrs. C. & T. Harris & Co. have plans before the T.C. for alterations and extensions of their premises.

Cardiff.—The Mount Stuart Dry Dock, Ltd., Cardiff, intend proceeding with the construction of a new graving dock, and legal notices have been deposited for the closing of portions of roadway at Bute Esplanade.

Carlisle.—A L.G.B. inquiry has been held with reference to the application of the T.C. for sanction to borrow £9,582 for the purchase of land at Willow Holme, and the erection of working-class dwellings there and at Boustead's Grassing.

Chicago.—Construction work on the new £1,000,000 Field Museum of Natural History has been begun. The edifice is to be completed in less than three years, and more than 3,000 men will be employed in the work. It will consist of three stories and a basement, and will cover an area of 700 ft. by 350 ft. The contractors are the Norcross Bros. Company, of New York and Worcester, Mass.

Curreeny—The tender of Messrs. D. O'Sullivan & Sons, Limerick, has been accepted by the Irish Commissioners of Public Works for the erection of the National School.

Dublin.—The Commissioners of Public Works, Ireland, have accepted the tender of Collen Bros., Ltd., East Wall, Dublin, for the erection of an extra story to the Labour Exchange.

Dudley.—The T.C. have decided to grant the application of the Birmingham Engineering Company for permission to establish a factory on the Cawney Bank Estate. Plans for thirty-eight houses in the neighbourhood of the factory to be erected by Messrs. Bean & Son have been passed.

Dundee.—Plans passed:—Peter's-court, alterations on dwelling-houses, for Messrs. Esplin & Clark; Victoria-road, alterations on theatre, for Mr. R. C. Buchanan.

Eastbourne.—New church in Dacre-road, Mr. Glanville Streatfield, architect.

Edinburgh.—The Dean of Guild Court has granted warrant to the North British Railway Company for the erection of a signal-box at Craigentinny, Seafield-road.

Fareham.—The R.D.C. has resolved that a sum not exceeding £1,649 be expended on the general roads at Crofton and the proposed new road at Hill Head, that this new road be now proceeded with, and that tenders be invited for the work in connection therewith.

Fishguard.—Temporary school building for Catholic children.

Harefield.—The 1st Australian Hospital at Harefield Park is shortly to be considerably enlarged.

Hertfordshire.—The C.C. have approved provisionally of plans for 100 cottages at Letchworth to house the Belgian refugees. The estimated outlay is from £175 to £210 per cottage.

Hitchin.—The U.D.C. has approved plans of a proposed new bakehouse for Mr. George Waldock to be erected at the back of Messrs. Cheeseman's house and shop in Bucklersbury.

Horbury.—Plans approved by the D.C.:—Cowshed at Broad-cut, Horbury Junction, for Mr. R. Burton's trustees; a time office at Albion Mills, Horbury Bridge, for Messrs. G. Harrop & Son; and two sanitary conveniences at property in Cluntergate, for Messrs. Horsfield & Baines. A plan submitted by Mr. C. Wensley for a smithy in Park-street has been referred to a sub-committee to visit the site and report.

Ilford.—The Carnegie Trust have intimated to the U.D.C. that their grant for a central library will be limited to £6,000. The T.C. have decided to ask that the erection of the library be not proceeded with until the end of the war.

Ivybridge.—The U.D.C. has agreed to the amended plans for the erection of a new Lloyd's Bank in Fore-street.

Jarrow.—Additions to premises of the Jarrow and Hebburn Co-operative Society; alterations to premises, for Messrs. Brown & Glover; three houses, Kitchener-terrace, for Mr. C. D. Newby; twenty-seven houses, Northbourne-road, for Lord Northbourne.

Kirkley.—Plans approved by the U.D.C.:—Annesley Woodhouse Co-operative Society, cesspool for twelve houses, Annesley-road; Mr. A. Hunt, dwelling-house, Welbeck-street; Mr. L. Rickett, two dwelling-houses, Clumber-street; Messrs. Riley & Ward, two dwelling-houses, George-street; Dr. Nisbet, temporary surgery, The Hill.

Linthwaite.—The plan of a workshop at Milnsbridge for Mr. Thomas Taylor has been approved by the U.D.C.

Lisburn.—The Town Solicitor has been instructed to take the necessary steps to enable the Council to proceed with the carrying out of the proposed scheme for extending the water supply, in accordance with the Provisional Order obtained for that purpose.

London.—New cinema hall at Rotherhithe.

Lowestoft.—The L.G.B. have sanctioned a loan of £7,500 to the T.C. for sea defence works.

Lurgan.—The U.D.C. have approved of a draft mortgage for the loan of £1,200 for completing the Council's scheme of artisans' dwellings.

Luton.—Additions to factory, for Messrs. G. Kent; alterations of premises in Park-street, for Mr. W. Skinner; additions to factory of Vauxhall Motors, Ltd.; additions to factory of Thermo Electric Company; addition to premises in Hastings-street, for Mr. F. Thurston; addition to factory, Melson-street, for Mr. A. H. Woodfield; rebuilding of Cardinal public-house; nine houses in Portland-road, for Mr. C. H. White; two houses in Alexandra-avenue, for Mr. H. Cook.

Lynn.—The B.G. have accepted the tender of Messrs. B. W. Johnson & Sons for £12 10s. for work required in the infirmary.

Madeley (Salop).—The D.C. has approved plans for the building of twenty-eight new wash-houses and twenty-eight privies, and also the erection of fourteen ashpits.

Newcastle.—The Corporation are considering the question of the erection of 700 houses on the Corporation's estate at Walker. The Town Moor and Parks Committee of Newcastle Corporation has granted permission to the British National Council of the Y.M.C.A. to erect a refreshment and recreation room at a nominal rental in the Cruddas Park, Scotswood-road, for the use of munition workers during the period of the war.

Newtimber.—A scheme has been prepared by the East Sussex C.C. for the acquisition of six acres of land situate on the east side and adjoining Dyke-road, in the parish of Newtimber, for small holdings.

* See also our list of Competitions, Contracts, etc., on page 236.

Norwich.—Sir Peter Eade has left £500 for the erection of a parish hall for St. Giles parish.

Nottingham.—It is stated that plans have been approved for the three branch libraries.

Portugal.—The Government have been authorised to raise a loan of 5,000,000 escudos for the execution of port improvements at Lisbon.

Ramsgate.—Plans passed by the T.C.:—For alterations to Camden-road Brewery, owners, Messrs. Olby, Ltd.; for alterations to Nos. 28 and 30, Belmont-street, owner, Mr. Entwistle.

Romford.—Plans passed by the U.D.C.:—Drainage of camp on Balgores Estate, for King's Royal Rifles; additions at Old Church, in connection with the slaughterhouse, for Mr. G. J. Palmer; and motor garage in Havering-road, for Mr. A. R. Sheward.

St. Helens.—House, Lascelles-street, for Mr. T. J. Bridge; seven houses, Tennyson-street, for Messrs. Clough & Gaskell; twenty-five houses in Rivington-street, for Mr. J. Stott.

Scarborough.—The contract, amounting to several thousands of pounds, for reinstating the Grand Hotel and Restaurant, greatly damaged in the bombardment of Scarborough last December, has been placed in the hands of a local builder.

Slaithwaite.—Plan of a new motor house for the Slaithwaite Spinning Company, Ltd., and of a shed at Commercial Mills for Messrs. Pearson Bros., Ltd., have been passed by the U.D.C.

Sligo.—A new convent is to be built immediately from the designs of Messrs. W. H. Byrne & Son, architects, Dublin.

Smerwick.—The tender of Mr. J. Flahive, Dingle, has been accepted for the erection of St. Brigids National School.

Spain.—The contract for the construction of a railway station at Canfranc, on the line from Zuera to Oloron, has been awarded to Don Vicente Riestra, of Pontevedra, at the price of 2,084,000 pesetas (about £83,360).

Stoneham.—The North and South Stoneham Drainage Committee have decided, with regard to the disposal of the sewage from the Remount Depot at Swaythling, that if the War Office would carry out certain work, estimated at £2,200, then the Council would undertake the disposal of the sewage upon the payment of £200 per year.

Stratford-on-Avon.—Foundation-stones of a new Wesleyan Chapel at Wellesbourne were laid on September 2.

Swadlincote.—Plans passed by the U.D.C.: By Mr. C. McCann, for alterations to Empire Picture Palace, West-street, Swadlincote; Mr. C. Ashby, for storeroom and workshop, Woodstreet, Gresley; Messrs. Tooth & Co., for new storeroom, Swadlincote-road, Woodville.

Swanage.—A plan has been passed by the U.D.C. for stores at Brook Depot, deposited by Messrs. Parsons & Hayter.

Swindon.—Plans passed by T.C.:—Mr. E. H. Bradley, for Mr. O. Hill, motor-house, rear of Wroughton-road; Mr. F. Collard, alterations, 34, Bridge-street; Mr. R. J. Beswick, for Mr. J. L. Braund, secretary, Swindon Industrial Co-operative Society, additions to shop, 6, Fleetstreet; Mr. G. H. Strange, two dry earth closets (temporary), Telford-road; Mr. G. Kilminster, amended block plan of six houses, William-street.

Wallsend.—Six houses in High-view, for the High-view Building Company; alterations to premises in High-street East, for Mr. J. McCreesh.

West Hartlepool.—Plans passed by the T.C.:—Mr. T. F. Thompson, addition to warehouse, Park-road; Mr. J. Abbey, altering dwelling-house into shop and premises, 8, Victoria-road; Mr. J. Lumley, altering shop and dwelling-house into two dwelling-houses, Milton and Murray streets; Mr. A. Allen, shed, back Wilson and Bright street (as a temporary building until June 30, 1916); Messrs. J. Taylor & Son, shed in yard of shop, Whitby-street (as a temporary building until June 30, 1916); Mr. J. A. Henderson, greenhouse, Eldon-grove (as a temporary building until June 30, 1916); Miss Rooke, alteration of house, Alma-street; Hartlepools Co-operative Society, Ltd., erecting lavatory at bakery, Waldon-street; Mr. J. Henderson, altering stable, back Burbank-street; Seaton Carew Iron Company, Ltd., gas and water meter house at works, Mainsforth-terrace South; Mr. J. Black, motor garage, Wooler-road (as a temporary building until June 30, 1916). Resurfacing with annealed slag the following streets for the T.C.:—Everett-street, Suggitt-street, Angus-street, Hopps-street, Slater-street, Blake-street, Briarstreet, Carr-street, Richardson-street, Suffolkstreet, Percy-street, Cambridge-street, Stephenstreet, Harrison-street, Catherine-street, Eamontgardens, Hilda-street, Arncliffe-gardens, Hampshire-street, Wansbeck-gardens, Sussex-street, Belmont-gardens, Brown-street, Lansdowne-road, Grace-street, and James-street. Tenders have been accepted for the rebuilding of the Palace Hotel Front, and the work will be proceeded with at an early date.

GENERAL BUILDING NEWS.

CHAPEL, SOUTHMEAD.

The Lord Bishop of Bristol opened and dedicated recently the new chapel which has been erected at the Southmead section of the 2nd Southern General Hospital. The architect was Mr. W. S. Skinner, and the builder Mr. Frank Chown.

HOUSE AT ONGAR.

With reference to the illustrations of a house at Ongar, Essex, which appeared in our last issue, we have been asked to state that the oak panelling, staircase, and other interior work has been executed by Messrs. Samuel Elliott & Sons (Reading), Ltd., Caversham.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur:—

——	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Aberdare	9	—	9½	9½	—	9	8	6½	6½	6½
Accrington	10	10	9½	9½	9	9	9½	6½	6½	6½
Altrincham	9½	10	10½	10	8½	10	9	6½	6½	7
Ashton-under-Lyne	10½	10½	10	10½	9	10	9	6	6	7
Barnsley	9½	9½	9½	9½	9	9	8½	7	7	7
Barrow-in-Furness..	9½	10	9½	9½	9½	9½	9½	7	7	7
Barry	9½	9½	9½	10	—	9	8½	6½	6½	6½
Bath	8½	8½	8½	8	7½	8	7½	6	6	6
Bedford	8	8	8	8½	8	9	6½	5½	5½	6
Birkenhead	11	11	11	11½	11	11	9½	7	7	7
Birmingham	11	11	11	11	10½	11½	9½	8	8	8
Bishop Auckland	9	9	9	9	10	9	7½	6	6	6½
Blackburn	10	10½	10	10	9½	10	9½	6½	7½	7½
Blackpool	10½	9½	9½	9½	8½	9	8½	6	6	6
Bolton	10	10½	10	10½	10	10	9½	6–7	7	7
Bournemouth	8½	9	9	9	8½	9	8½	6½	6½	6½
Bradford	10	10	9½	9½	10	10	8½	7	7	7
Bridgwater	6½	6½	6½	6½	6½	6½	6	4	4	4
Brighton	9	8½	8½	8½	—	8	7	6	6	6
Bristol	10½	10½	10½	10½	—	10½	9½	7½	7½	7½
Burnley	10	10½	9½	9½	8	9	9½	7	7	7½
Burton-on-Trent	9	9	9	9½	9	9	8½	6½	6½	6½
Bury	10½	10½	10	9	9½	10	9	6	7	7
Cambridge	9½	9	9	9½	9½	9½	7½	6	6	6
Canterbury	8½	8	8	10	—	8½–9	7	5	5	5
Cardiff	10	10	10	10	10	10	9	7	7	7
Chatham	8	9	9	9	9	9	7½	6	6	6
Chelmsford	8	7½	8½	9	—	7½	6½	5	5	6½
Cheltenham	8½	8½	8½	8½	—	8½	8½	6	6	6
Chester	9½	10	9½	9½	9½	9½	8½	5½	6½	6½
Chesterfield	9	9	9	8	9	8½	8½	5½	5½	5½
Colchester	8	8½	8½	9	8	9	6	5½	5½	5½
Coventry	10½	10½	10½	10½	9½	10½	9½	7½	7½	7½
Crewe	7½	8	7½	9	8½	8	7½	5½	5½	6
Darlington	9½	9½	9½	10	10	9	8½	6½	6½	6½
Derby	9½	9½	9	9	9	9	8	6½	6½	7
Doncaster	9½	9½	9	9	9	9	8	6½	6½	7
Dudley	8½	8½	9	8½	8½	8	7½	5½	5½	6
Durham	9	9	9½	9	10	9	8½	6	6	6½
East Glamorgan and Monmouthshire Valleys	9½	9½	9½	9½	—	—	8½	6½	6½	6½
Exeter	8	8½	8	8½	7½	7½	7	5½	5½	5½
Folkestone	8½	8½	8½	9	8½	8½	7–7½	6½	6½	6½
Gloucester	8	8½	8½	8	8	8½	8	5½	5½	5½
Grantham	8	8	7½	7½–8	7½–8	7	6½	5	5	5
Grays	—	10	10	—	—	9½	8½	7	7	7
Grimsby	9	9	9	9½	9	8	8½	7	7	7
Great Yarmouth	8	8	8	—	8	8	6½	5	5	—
Halifax	10	10	9	8½	8½	9	8½	7	7	7
Harrogate	9½	9½	9	9	8	9	8½	6½	6½	6½
Hartlepools	9	10	9½	10	10	10	9	7	7	7½
Hastings	8½	8	8	8½	8	8	7	6½	5½	6½
Hereford	8	8	7½	8½	8	7	7	5½	5½	5½
Huddersfield	10	9½	9½	9½	10	9	8½	7	7	7
Hull	10½	10	10	10	10	10	8½	7½	7½	7½
Ipswich	8½	8½	8½	9	9	8½	7	5½	5½	5½
Lancaster	10	10	9	9	9	9	9	6	6	6½
Leamington Spa	9	9	9	8½	9	9	8	6	6	6
Leeds	10	10	10	10	10	10	8½	7½	7½	7½
Leicester	9½	9½	10	10½	10	9½	9	7	7	7½
Lincoln	9	8½	8½	9	8½	8½	8	6	5½	6½
Liverpool	11	11	11	11	10½	11	9½	7	7	7
Llanelly	9½	9½	9½	8½	9	8½	8	5½	5½	5½
London	11½	11½	11½	11½	—	1s.	9	8	8	8
Loughborough	9	8½	8½	9	9	8½	7½	5½	5½	6½
Luton	9½	8½	8½	8½	9	8½	7½	6	6	6
Maidstone	9	9	9	9	9	9	8	6	6	6
Manchester	10	10½	10½	11	10	10	9½	6½	6½	7½
Mansfield	8½	9	8½	8½	—	8½	8	6	6	—
Merthyr Tydfil	9½	9½	9½	9½	8½	9	8	6½	6½	6½
Middlesbrough	9	10	9½	10	10	10	8½	7	7	7½
Newcastle-on-Tyne	11	11	11	11	10	10	9½	7½	7½	7½
Newport, Mon.	10	10	10	10	8½	10	9	7	7	7
Northampton	9	9	9	9	8½	9	8	6	6	6
Norwich	8½	8½	8½	8½	8	8½	7½	6	6	6
Nottingham	10	10	10	10½	9½	10	9	7½	7½	8
Oldham	10½	10½	10½	10	9	10	9½	7	7	7½
Oxford	9½	9	9	9	8	9	8	6½	6½	6½
Plymouth	9	9	9	9	9	9	8	6½	6½	6½
Pontypridd	9½	9	9	9½	9	9	8	6½	6½	6½
Portsmouth	9½	9½	9½	9½	—	8½	7½	7	7	7
Preston	10½	10½	10	9½	9½	10	9½	6	6½	6½
Reading	8½	9	9	9½	—	9	7½	6	6	6
Rochdale	10½	10½	10	10	8½	9½	9	7	7	7½
Rochester	8	9	9	9	9	8½	7½	6	6	6
Rugby	9½	9½	9½	8	9½	9½	8½	6	6	6
St. Albans	9	9	9	9–10	9	9–10	8	6½	6	6½
St. Helens	9	9½	10	9½	9½	9½	9½	6	6½	6
Scarborough	9	9½	9	8½	8	9	8	7	7	7
Sheffield	10½	9½	9½	9½	9½	10	8½	6½	6½	6½
Shrewsbury	8½	8½	8½	9½	—	8½	7	5½	5½	5½
Southampton	8½	9½	9½	8½	—	9½	8½	6½	6½	6½
Southend-on-Sea	9	9	9	9	P'cework	9	7	6	6	6
Southport	10	10	9½	9½	9½	9½	9½	6½	7	7
South Shields	11	11	11	11	10	8½	9½	7½	7½	7½
Stockport	10½	10	10	10½	9½	10	9½	6	6½–7	7½
Stockton-on-Tees	9	10	9½	10	10	10	9	7	7	7½
Stoke-on-Trent	9	9½	9	9	—	8½	8½	6	6	—
Stroud	7½	7½	7½	7½	7½	7½	7	5	5	5
Sunderland	10½	11	10½	10	10	9	9½	7½	7½	7½
Swansea	9½	9½	9½	9½	8½	9	9	6½	6½	6½
Taunton	7	7	7	7	—	6	6½	4½	4½	4½
Torquay	8	8	8	8	8	8	8	6	6	6
Wakefield	9½	9½	9	9½	8½	9	8	7	7	7
Walsall	9½	9	9	9	8½	9	8	6½	6½	6½
Warrington	8½	9½	9½	10	8½	9½	8½	5½–6	6	6–6½
West Bromwich	10	10	10	10½	—	9	8	7	7	7
Wigan	10	10½	9½	9½	9	9½	9½	7	7	7
Windsor	9	9	9	10	—	9	—	6	6	6
Wolverhampton	9½	9½	9½	10	8	10	8	6½	6½	6½
Worcester	8½	9	9	9	9	9	7½	6	6	6
York	9½	9½	9	9½	9½	9	8½	7	7	7

The mason's rate given is for bankers; fixers usually ½d. per hour extra.

List of Competitions, Contracts, etc.

For some contracts still open, but not included in this List, see previous issues. **Those with an asterisk (*) are advertised in this number:** Competitions, —; Contracts, vi., viii.; Public Appointments, —; Auction Sales, xxx. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Competitions.

OCTOBER 1.—**Dublin.**—STATUE.—The Central Council of the Gaelic Athletic Association, Ltd., offer a prize of £25 for the best design of a statue of the late Dr. Croke. The base and pedestal to be formed of Irish limestone or granite, and the statue of bronze. Mr. L. J. O'Toole, secretary, Croke Park, Jones's-road, Dublin.

NOVEMBER 30.—**York.**—TOWN PLANNING.—The Town Planning Committee of the York Corporation invite competitive schemes under the Housing and Town Planning, etc., Act, 1909, in connection with certain areas within and without the city.

Contracts.

BUILDING AND PAINTING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

SEPTEMBER 24.—**Ireland.**—BUILDING, ETC.—Tenders are invited for the execution of the following works for Messrs. Deasy & Co., brewers, Clonakilty:—(*a*) Rebuilding Marine Hotel, Glandore; (*b*) erection of annexes with lavatory accommodation at Timoleague; (*c*) execution of certain works at Mr. Thomas Calnan's licensed premises, Roscarberry. Plans, etc., of Mr. Joseph A. M'Carthy, M.Inst.M.E., Timoleague.

SEPTEMBER 27.—**Batley.**—PAINTING, ETC.—For the cleaning, painting, etc., of the inside of the Batley Carr Primitive Methodist Chapel. Specifications may be seen at the chapel on Monday and Tuesday, from 4 to 6 p.m. Mr. Walter Purdy, Canary Island, Batley Carr, Batley.

SEPTEMBER 27.—**Bristol.**—PAINTING, ETC.—Internal painting, distempering, repairs, etc., at Stapleton Institution. Specification of Mr. J. J. Simpson, Clerk to the Guardians, St. Peter's Hospital, Bristol.

SEPTEMBER 27.—**Halifax.**—GARAGE.—Erection of garage, etc., at Highroad Well Works. Names to Messrs. Chas. F. L. Horsfall & Son, architects, Lord-street-chambers, Halifax.

SEPTEMBER 27.—**Harrogate.**—PAINTING.—Exterior painting work required to the swimming baths, High Harrogate, and Starbeck Baths and Buildings, for the Corporation. Specification of Mr. C. E. Rivers, A.M.Inst.C.E., Borough Engineer, Municipal Offices.

SEPTEMBER 27.—**Holywood.**—ALTERATIONS, ETC.—Alterations, etc., to Ballykeel Orange Hall, Holywood. Plan may be inspected and specification had from Mr. James Jamison, Ballykeel, Holywood.

SEPTEMBER 27.—**Keighley.**—PAINTING.—For external painting to old portion of baths and washhouse. Particulars from the Borough Engineer, Town Hall.

SEPTEMBER 27.—**Rathdrum.**—PAINTING.—For the painting, in two good coats, of the railings surrounding the Dispensary Residence at Arklow, for the Guardians. Mr. P. W. Sheehan, Clerk of the Union.

SEPTEMBER 27.—**Weston-super-Mare.**—VILLA.—Tenders are required for the erection of a villa. Particulars of Messrs. C. F. Masters & Co., auctioneers, etc., 4, South-parade, Weston-super-Mare.

SEPTEMBER 28.—**Evesham.**—COTTAGE.—Erection of a caretaker's cottage at the Evesham Corporation Sewage Works. Plans, etc., of Mr. H. S. Harvey, Borough Surveyor, Town Hall, Evesham. Mr. Thos. A. Cox, Town Clerk.

SEPTEMBER 28.—**Nottingham.**—BATHROOMS, ETC.—Erection of new bathrooms, etc., at the Black Ward Block, City Isolation Hospital, Bagthorpe. Quantities from the office of the City Architect, Mr. A. Dale, Guildhall. Deposit, £2, 2s.

SEPTEMBER 29.—**Freiston Ings.**—STABLE, ETC.—For erection of stable, chaff house, and general repairs to house and farm buildings at Ireland's Farm, Freiston Ings, for the Holland C.C. Quantities of Mr. J. A. Christie, County Land Agent, Sessions House, Boston.

SEPTEMBER 30.—**Huntingdon.**—ARTIZANS' DWELLINGS.—Erection of forty artizans' dwellings houses on "Stoney Close" (adjacent to the late Militia Barracks), for the T.C. Plans, etc., at the Borough Surveyor's Office, Hartford-road, Huntingdon.

OCTOBER 8.—**Duns.**—POST OFFICE.—Erection of post office at Duns, Berwickshire. Quantities at H.M. Office of Works, 3, Parliament-square, Edinburgh. Deposit, £1 1s.

OCTOBER 16.—**Spain.**—POST OFFICE.—The *Gaceta de Madrid* notifies that the municipal authorities of Valencia will on October 16 open tenders for the construction of a building to be used as a post and telegraph office. A copy of the *Gaceta* may be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

NO DATE.—**Ashton-under-Lyne.**—PAINTING.—For the outside painting of the District Infirmary, Ashton-under-Lyne, for the Governors. Specification of Mr. Frank Oliver, General Superintendent and Secretary, the Infirmary, Ashton-under-Lyne.

NO DATE.—**Blackwood (Mon.).**—ADDITIONS.—Additions to the Presbyterian Church, Blackwood, Mon. Plans, etc., may be seen and forms of tender obatined from Mr. Hugh Caldwell, C.E., Blackwood.

NO DATE.—**Cork.**—OFFICE EXTENSION.—Extension of offices, Leitrim-street, for Messrs. Eustace & Co. Plans, etc., of Messrs. Arthur & H. H. Hill, architects, 22, George's-street, Cork.

FURNITURE, MATERIALS, etc.

SEPTEMBER 25.—**Grimsby.**—PAINTS AND OILS.—Supply of paints and oils to the Guardians for a period of three months, commencing October 1. Forms of tenders of Mr. J. F. Wintringham, Clerk, St. Mary's-chambers, Grimsby.

SEPTEMBER 25.—**Macclesfield.**—PAINTERS' MATERIALS.—Supply to the Guardians of painters' materials. Forms of Mr. Frank Harrison, Assistant Clerk, Union Offices, Macclesfield.

SEPTEMBER 27.—**Alford.**—GRANITE.—Supply to the U.D.C. of about 700 tons of granite and screenings. Mr. T. N. Loy, Clerk, Alford.

SEPTEMBER 27.—**Croydon.**—MATERIALS.—Supply for a period of three or six months of the following materials, viz.:—Builders' materials, engineers' and carpenters' goods, glass, ironmongery, paint and painters' materials, for the Guardians. Mr. Harry List, Clerk to the Guardians, Union Offices, Mayday-road, Thornton Heath, Surrey.

SEPTEMBER 27.—**Dover.**—MATERIALS.—Supply to the T.C. of stores, materials, and labour in the following trades, for the period of three months, from October 1 to December 31, 1915:—Painter, glazier, and plumber (Surveyor's and Tramways Departments). Forms of tender of Mr. R. E. Knocker, Town Clerk, Town Clerk's Office, 69, Castle-street, Dover.

SEPTEMBER 27.—**Durham.**—MATERIALS.—The Visiting Committee of Durham County Asylum invite tenders for supplying the asylum with such of the following articles as may be required during the half-year commencing on October 1, 1915, viz.:—Glass, oils, paints, varnish, etc., bricks, cement, and lime, firebars and blacksmith's iron, plumbers' materials, ironmongery, timber. Forms of tender of the Steward at the Asylum, Mr. A. O. Smith, Clerk.

SEPTEMBER 27.—**Edinburgh.**—GAS COOKERS.—Supply to the Edinburgh and Leith Corporations' Gas Commissioners of gas cookers, required for delivery during a period of two, three, or five years at the Gas Commissioners' option. Specifications of Mr. Alexander Masterton, Engineer and Manager, 15, Calton-hill, Edinburgh.

SEPTEMBER 27.—**Edinburgh.**—MATERIALS.—Supply to the Midlothian and Peebles District Asylum, Rosslynlee, of the following articles for six months from October 15, 1915, to April 14, 1916:—Oils and paints, timber, brushes, mats, etc., ironmongery, stoneware and crystal, plumbers' material, electric fittings, fittings and material for machinery, boiler. Forms of tender of the Clerk and Treasurer, 19, Heriot-row, Edinburgh.

SEPTEMBER 27.—**South Shields.**—MATERIALS.—Supply of builders' materials, electrical fittings, engineers' goods, etc., to the B.G. Forms of tender of Mr J. W. Coulson, Clerk, Union Offices, South Shields.

SEPTEMBER 28.—**Aberdeen.**—FURNISHINGS.—Tenders are invited (from Aberdeen tradesmen only) for additional furnishings for the new hospital block, Kingseat Asylum. Tracings, sizes, etc., may be obtained from the subscriber any day from 10 a.m. to 1 p.m. Mr. C. B. Williams, Clerk of the City District of Control Board, 20, Union-terrace, Aberdeen.

SEPTEMBER 28.—**Croydon.**—MATERIALS.—Supply of building materials, engineers' and carpenters' goods, paint, etc., to the B.G. Forms of tender of Mr. H. List, Clerk, Union Offices, Mayday-road, Thornton Heath, Croydon.

SEPTEMBER 28.—**Warrington.**—CONDUIT.—Supply to the Warrington Electricity Department of twelve months' supply of earthenware conduit. Specification of Mr. F. V. L. Mathias, Borough Electrical and Tramways Engineer, Howley, Warrington. Deposit, £1 1s.

SEPTEMBER 29.—**Hyde.**—MATERIALS.—Supply to the Corporation of cement, iron castings, pitch, and creosote oil for the year ending September 30, 1916. Forms of tender of the Borough Surveyor, Town Hall, Hyde.

SEPTEMBER 29.—**Stafford.**—MATERIALS.—Supply to the Stafford Union of ironmongery, paints, etc. Forms of tender of Mr. C. B. Wilton, Clerk, Union Offices, Market-square, Stafford.

ENGINEERING, IRON, AND STEEL

SEPTEMBER 27.—**Dundee.**—HEATING AND VENTILATING.—For the heating and ventilating of the City Hall-buildings, Dundee, for the T.C. Plans of the subscriber. Mr. Jas. Thomson, City Architect, Municipal Offices, 91, Commercial-street, Dundee.

SEPTEMBER 27.—**Warrington.**—SECTIONAL BOILER, ETC.—Supply of sectional boiler and heating pipes in the pavilions, Aikin-street, for the Health Committee. Drawings, etc., of Mr. Andrew M. Ker, Borough Engineer and Surveyor, Borough Engineer and Surveyor's Office, Town Hall.

SEPTEMBER 28.—**India.**—STEEL MATERIAL.—Supply to the Madras and Southern Mahratta Railway Company, Ltd., of about 513 tons steel material (angles, flats, rounds, plates, etc.). Specifications (£1 1s., which will not be returned) of the Secretary, Company's Offices, 91, York-street, Westminster, S.W.

ROAD, SANITARY, AND WATER WORKS.

SEPTEMBER 24.—**Cleethorpes.**—DRAINAGE.—For road and drainage works on the Heys Estate, Cleethorpes. Quantities of Mr. G. Allison, architect, Regent House, West St. Mary's Gate, Grimsby.

SEPTEMBER 25.—**Chesterfield.**—CAST-IRON PIPES.—For the laying and jointing of 950 yds. or thereabouts of 7-in. cast-iron pipes between Troway and Birleyhay, in the parish of Eckington, for the Chesterfield R.D.C. Plans, etc., of the Council's Waterworks Engineer, Mr. Gilbert Frith, R.D.C. Offices, Chesterfield. Deposit, £1 1s.

SEPTEMBER 25.—**Wickersley.**—SANITARY WORK.—Converting existing privies into water-closets and fixing necessary fittings, etc., at the Wickersley Council School, for the West Riding C.C. Wickersley District Sub-Committee. Plans are deposited at the school, and specifications may be had from Mr. S. Abson, District Clerk, Education Office, Woodhouse.

SEPTEMBER 27.—**Eastbourne.**—STREET WORKS.—Making-up passages at rear of Bexhill, Sidley, Seaford, and Channel View roads. Specifications of Mr. A. E. Prescott, Borough Surveyor, Town Hall.

SEPTEMBER 27.—**Grimsby.**—STREET WORKS.—Making-up certain passages for the Corporation. Quantities of Mr. H. Gilbert Whaytt, Borough Engineer, Municipal Buildings, Grimsby. Deposit, £1. 1s.

SEPTEMBER 29.—**Bucklow.**—DRAIN.—For the laying of 330 yds. of 12-in. socketed pipe surface-water drain, with two manholes, near Sale-road, Northenden, for the R.D.C. Specification of Mr. R. Curtis Cordon, Highway Surveyor, Knutsford. Mr. George Leigh, Clerk to the Council, Union Offices, Knutsford.

SEPTEMBER 30.—**Hollingbourn.**—STEAM ROLLING.—Supply of steam rollers to the Hollingbourn R.D.C.: five 14-ton weight modern rollers, each to be worked nine hours per day, and to be supplied with fuel, water barrel, spreader, and the necessary men; three rollers to be supplied with scarifiers. Mr. J. Stanley Roper, Surveyor to the Council, Hollingbourn, Maidstone.

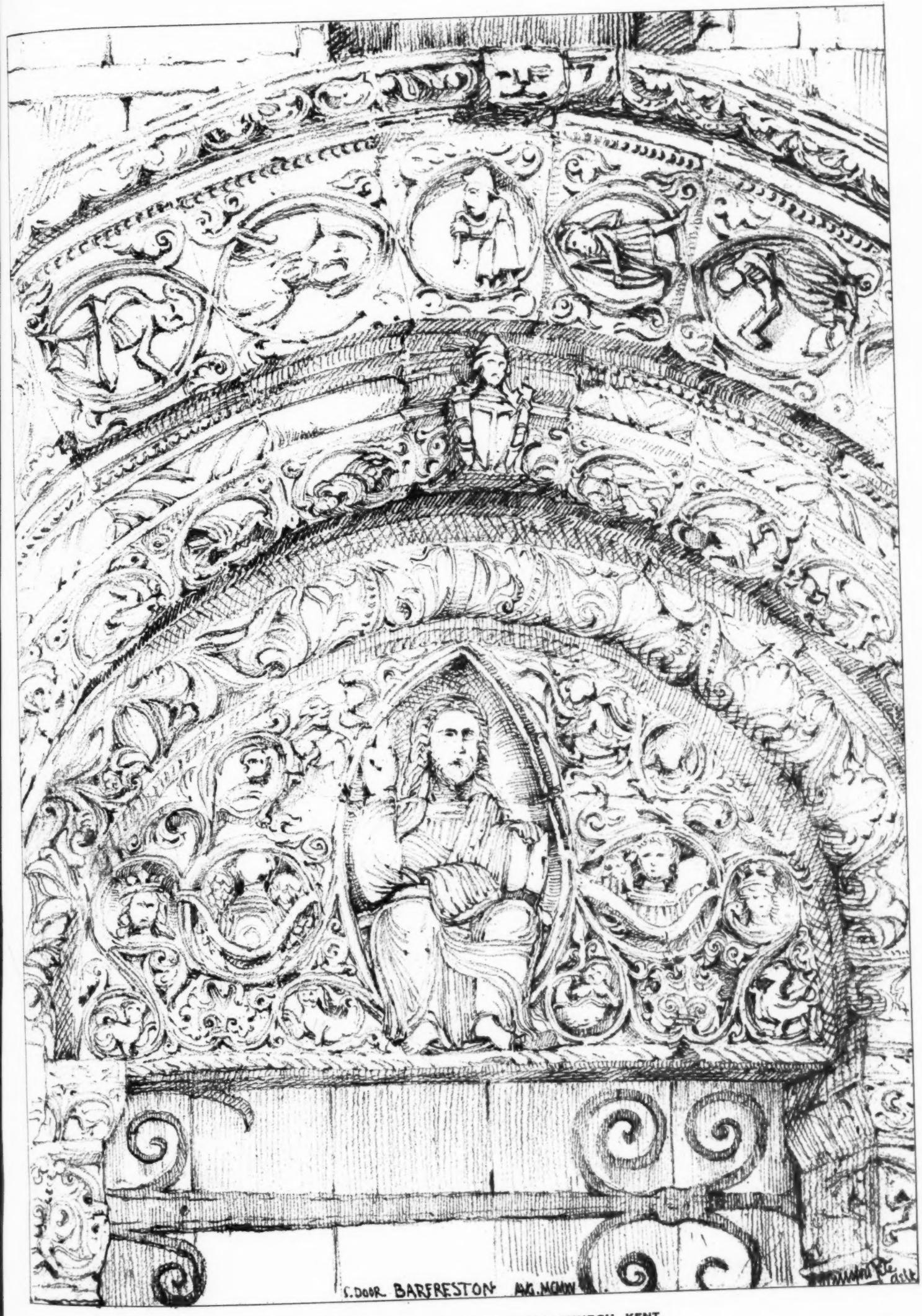
SEPTEMBER 30.—**Langley Moor.**—SEWER, ETC.—Construction of 395 lineal yds. of 9-in. sewer and 50 yds. of surface drain, together with manholes, etc., at Browney Colliery, also the construction of 50 yds. of culvert at Langley Moor, for the Brandon and Byshottles U.D.C. Quantities of Mr. Geo. G. Donkin, Surveyor, Langley Moor.

SEPTEMBER 30.—**Ramsgate.**—CEMENT.—Supply of Portland cement for a period of twelve months, from October 1, 1915, to September 30, 1916. Schedule and form of tender at the Borough Engineer's office any day between the hours of 10 a.m. and 5 p.m. (Saturday 10 a.m. to 1 p.m.). Mr. T. G. Taylor, Borough Engineer, Borough Engineer's Office, Albion House, Ramsgate.

Auction Sale.

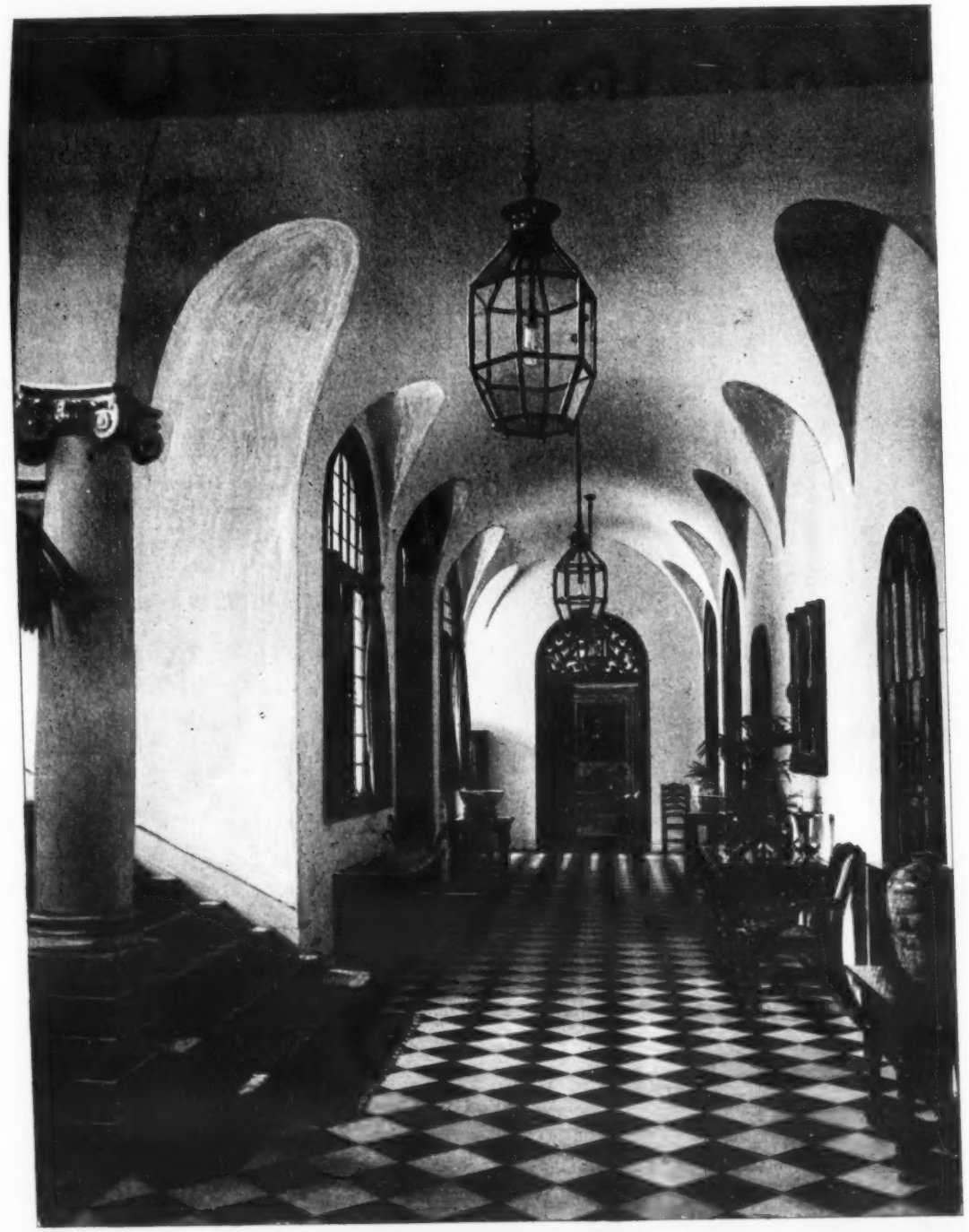
* SEPTEMBER 28.—**Shoreditch.**—Messrs. J. Hibbard & Sons will sell by auction, on the premises, a stock of timber

[Those with an asterisk (*) are advertised in this issue.]

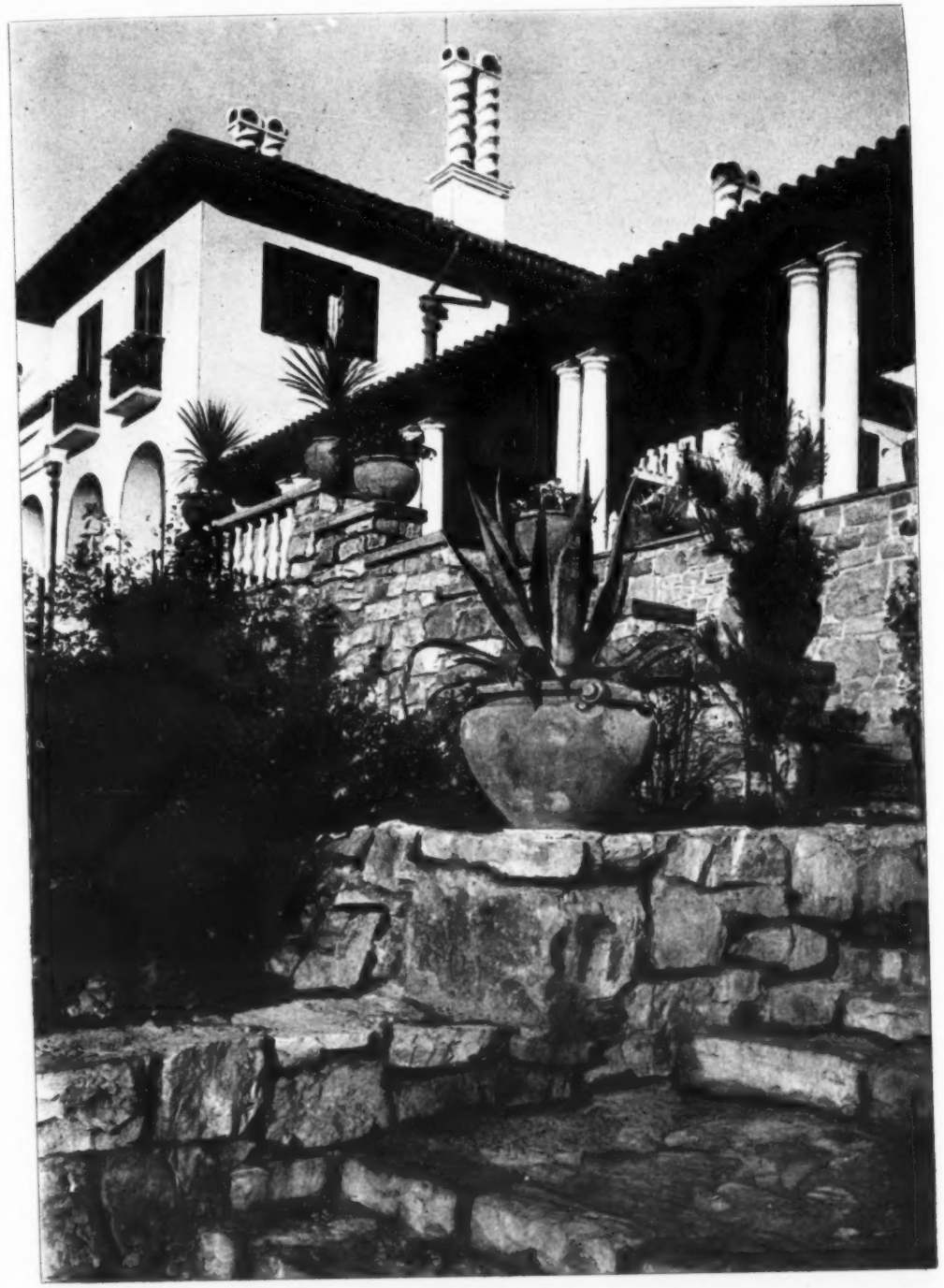


TYMPANUM, SOUTH DOOR, BARFRESTON CHURCH, KENT.

FROM A DRAWING BY PROFESSOR BERESFORD PITE, F.R.I.B.A.



ENTRANCE CORRIDOR.

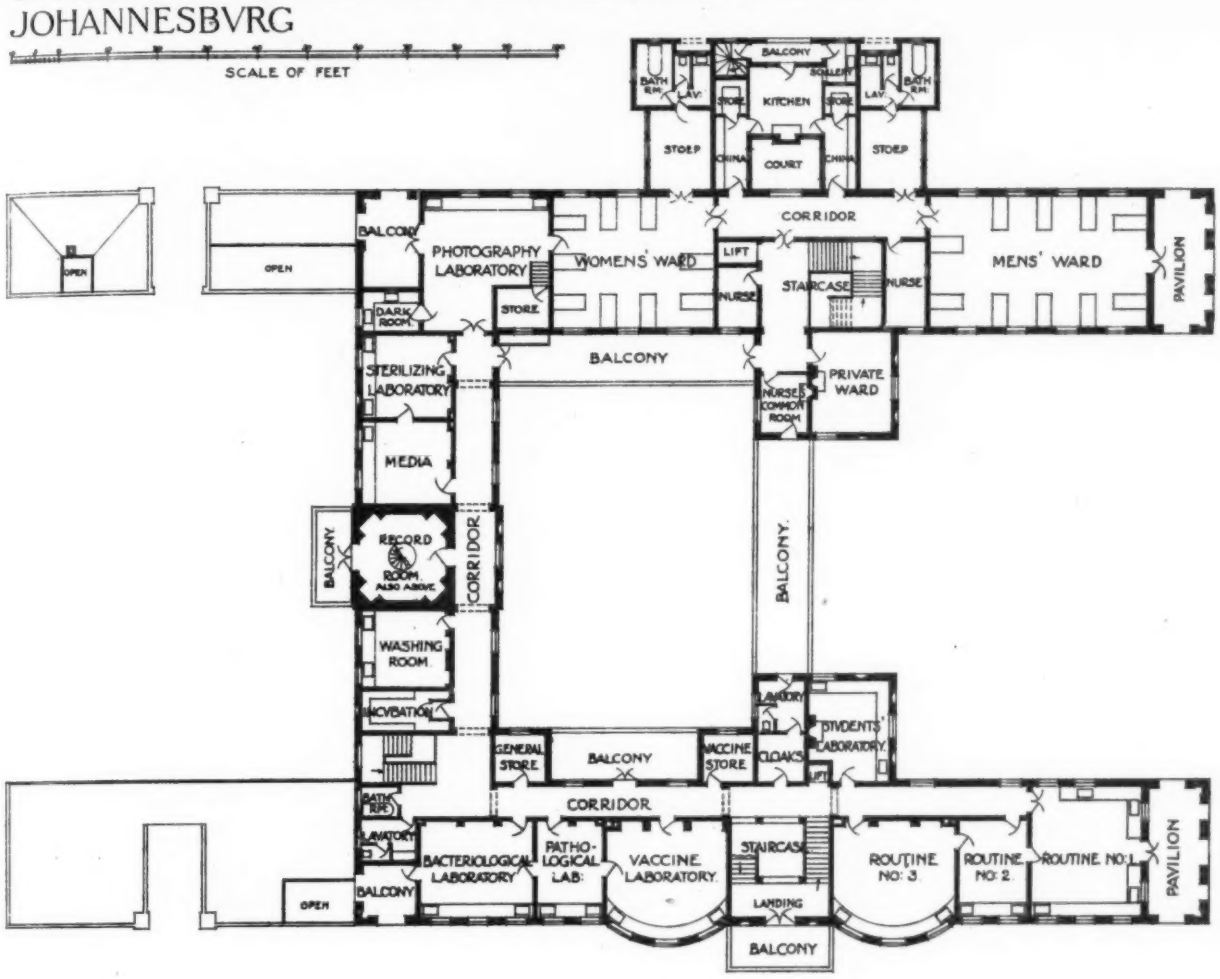


STEPS TO CLOISTER.

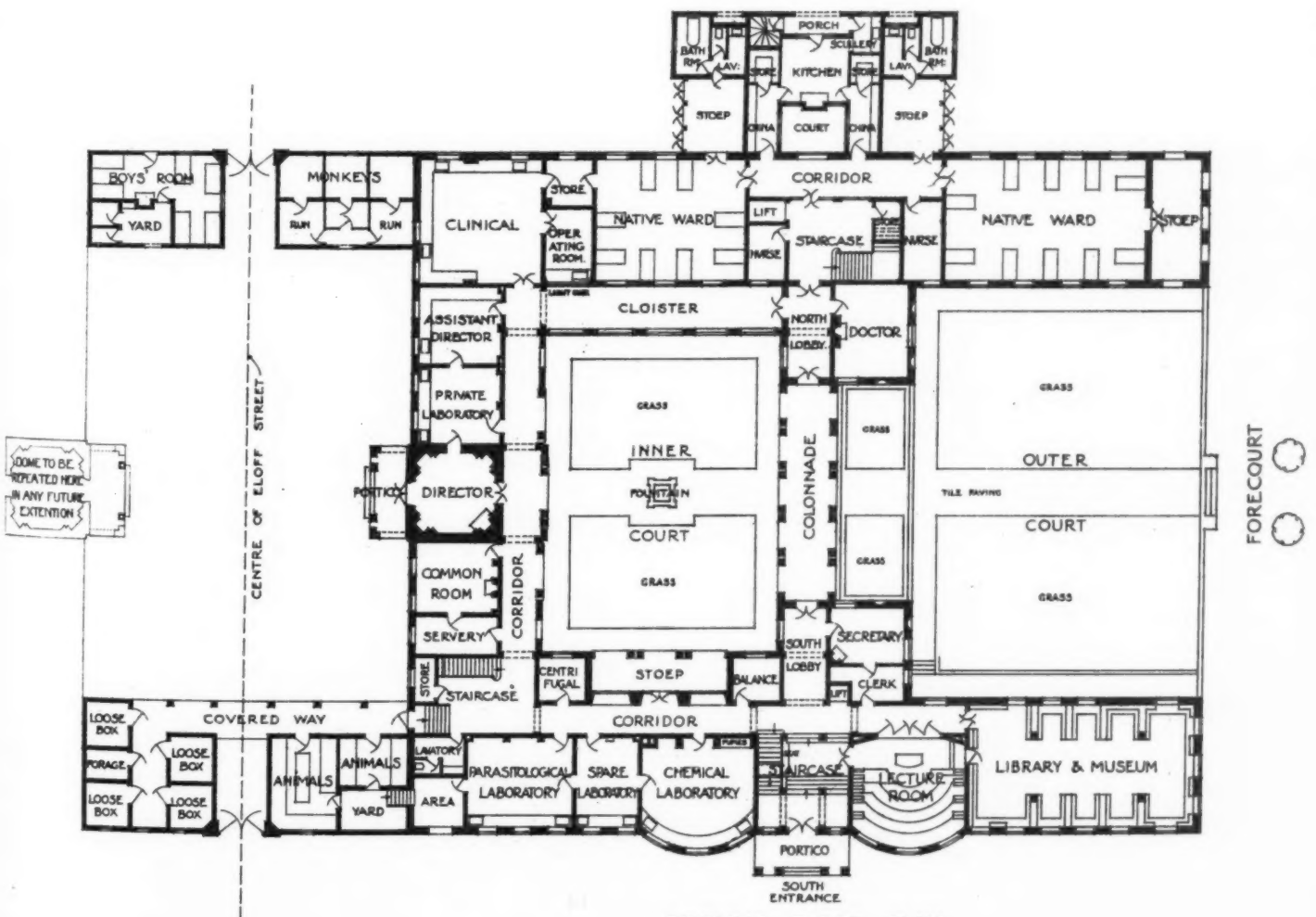
VILLA ARCADIA, JOHANNESBURG.

MR. HERBERT BAKER, F.R.I.B.A., ARCHITECT.

SOVTH AFRICAN INSTITVTE FOR MEDICAL RESEARCH JOHANNESBVRG



FIRST FLOOR PLAN

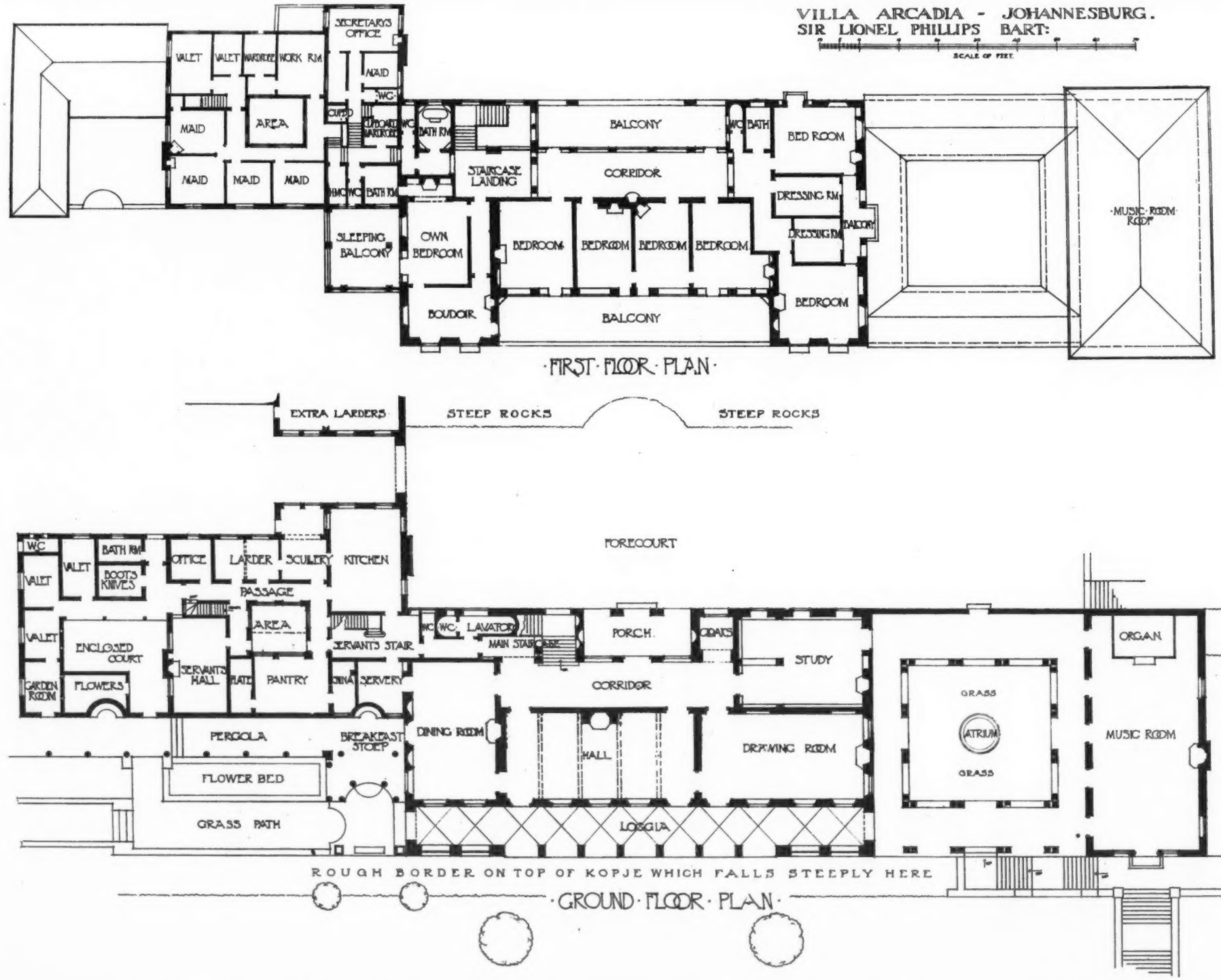


GROUND FLOOR PLAN

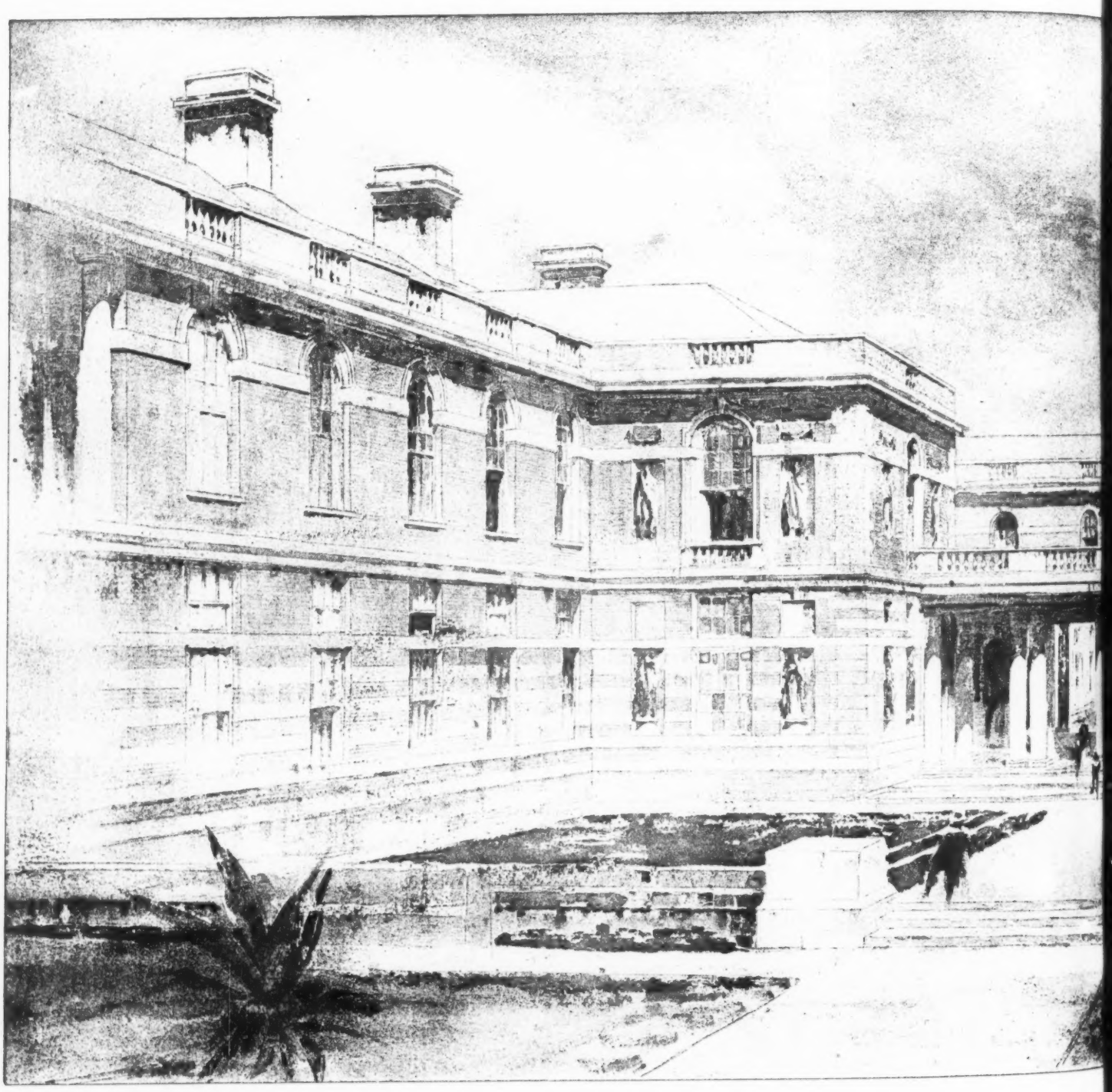
THE SOUTH AFRICAN MEDICAL RESEARCH INSTITUTE, JOHANNESBURG

Mr. Herbert Baker, F.R.I.B.A., and Mr. Fleming, Architects

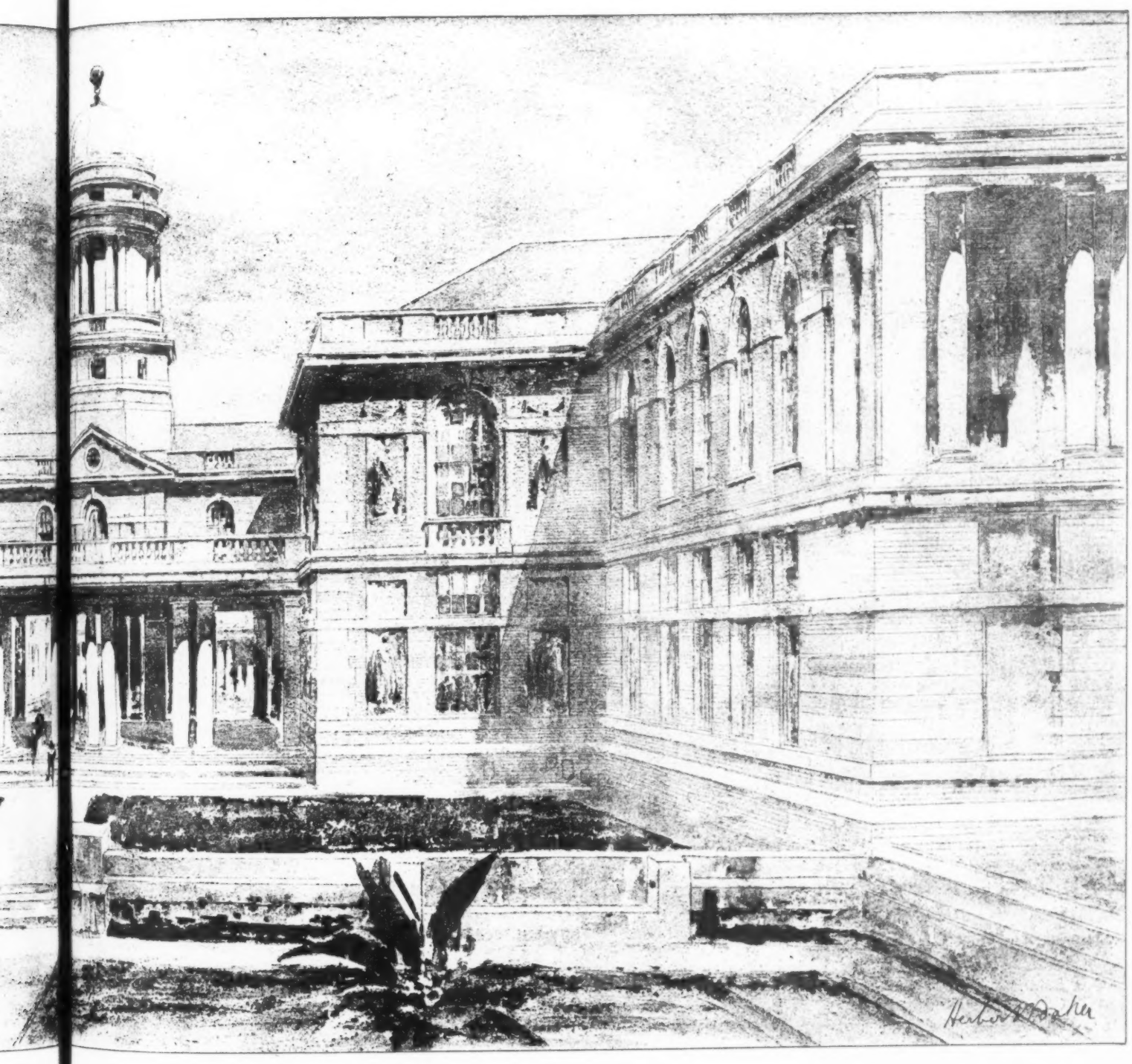
VILLA ARCADIA - JOHANNESBURG.



SIR LIONEL PHILLIPS' HOUSE, "ARCADIA," JOHANNESBURG, SOUTH AFRICA.—Mr. Herbert Baker, F.R.I.B.A., Architect.

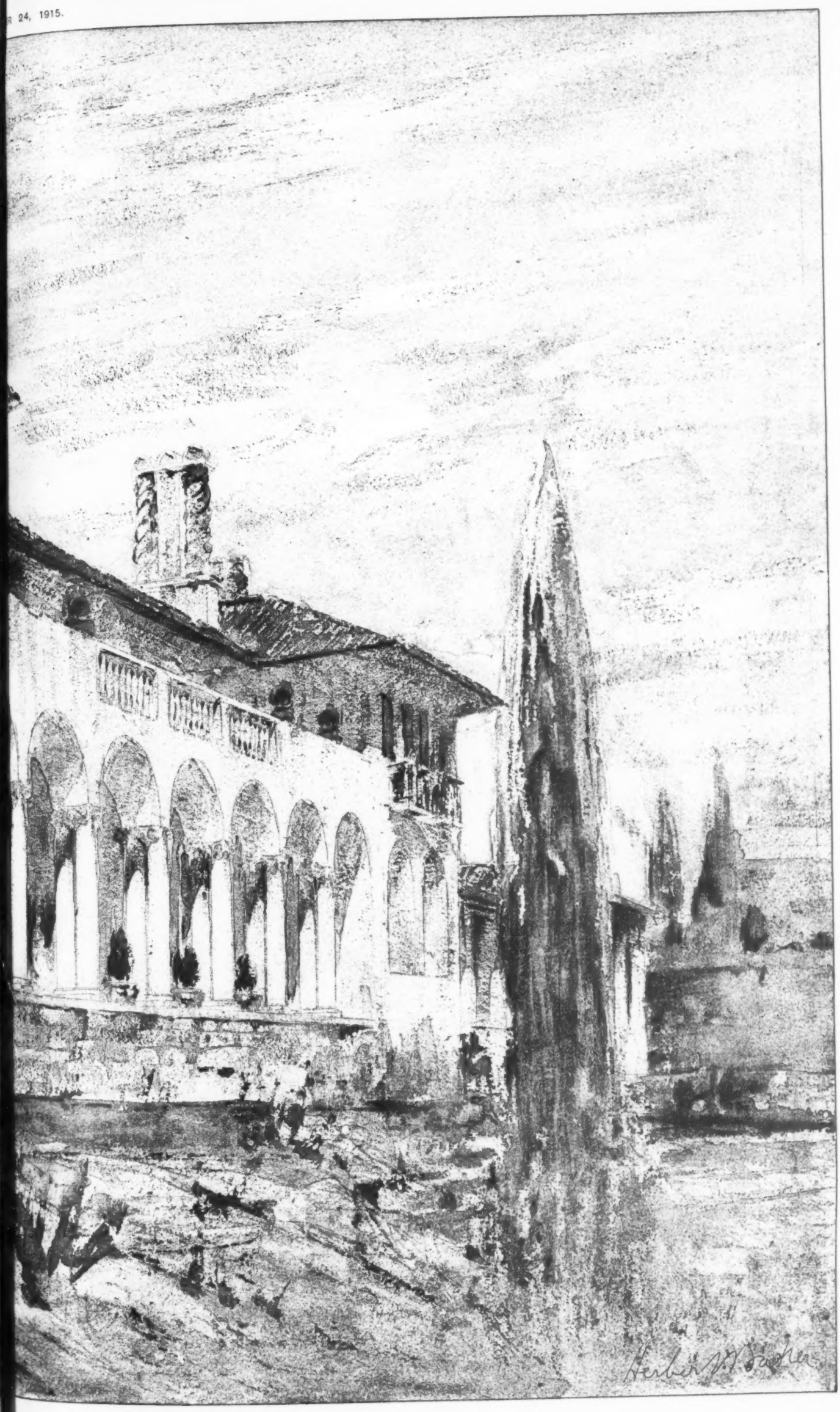


THE SOUTH AFRICAN MEDICAL RESEARCH INSTITUTE, JO SBURG.



TUTE, J SBURG.—Mr. Herbert Baker, F.R.I.B.A., and Mr. Fleming, Architects.

SIR LIONEL PHILLIPS' HOUSE, "ARCADIA," JOHA SOUTH



SOUTH AFRICA.—Mr. Herbert Baker, F.R.I.B.A., Architect.